



66/60/99

1c598
03/09/99

U.S. PTO
09/26/808
03/09/99

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

| | |
|--|--------------------|
| Attorney Docket No. | 35.C9525 D2/C/Div. |
| First Named Inventor or Application Identifier | |
| KAZUHIRO SUGAWARA | |
| Express Mail Label No. | |

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☐ Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)
2. ☒ Specification Total Pages
3. ☒ Drawings (35 USC 113) Total Sheets
4. ☒ Oath or Declaration Total Pages
 - a. ☐ Newly executed (original or copy)
 - b. ☐ Unexecuted for information purposes
 - c. ☒ Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 17 completed)
[Note Box 5 below]
 - i. ☐ DELETION OF INVENTOR(S)
Signed Statement attached deleting
inventor(s) named in the prior application,
see 37 CFR 1.63(d)(2) and 1.33(b).
5. ☒ Incorporation By Reference (useable if Box 4c is checked)
The entire disclosure of the prior application, from which a copy of
the oath or declaration is supplied under Box 4c, is considered as
being part of the disclosure of the accompanying application and is
hereby incorporated by reference therein.

6. ☐ Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
14. ☐ Small Entity Statement(s) ☐ Statement filed in prior application
Status still proper and desired
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Other: _____

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:
☐ Continuation ☒ Divisional ☐ Continuation-in-part (CIP) of prior application No. 08 /855,505

18. CORRESPONDENCE ADDRESS

☒ Customer Number or Bar Code Label 05514 (Insert Customer No. or Attach bar code label here) or ☐ Correspondence address below

| | | | | |
|---------|-----------|----------|--|--|
| NAME | | | | |
| Address | | | | |
| City | State | Zip Code | | |
| Country | Telephone | Fax | | |



| CLAIMS | (1) FOR | (2) NUMBER FILED | (3) NUMBER EXTRA | (4) RATE | (5) CALCULATIONS |
|--------|--|------------------|------------------|-------------------------------|------------------|
| | TOTAL CLAIMS (37 CFR 1.16(c)) | 32-20 = | 12 | X \$ 18.00 = | \$216.00 |
| | INDEPENDENT CLAIMS (37 cfr 1.16(b)) | 4-3 = | 1 | X \$ 78.00 = | \$78.00 |
| | MULTIPLE DEPENDENT CLAIMS (if applicable) (37 CFR 1.16(d)) | | | \$260.00 = | \$ |
| | | | | BASIC FEE (37 CFR 1.16(a)) | \$760.00 |
| | Total of above Calculations = | | | | \$1054.00 |
| | Reduction by 50% for filing by small entity (Note 37 CFR 1.9, 1.27, 1.28). | | | | |
| | TOTAL = | | | | \$1054.00 |

19. Small entity status

- a. ☐ A Small entity statement is enclosed
- b. ☐ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.
- c. ☐ Is no longer claimed.

20. ☒ A check in the amount of \$ 1054.00 to cover the filing fee is enclosed.

21. ☐ A check in the amount of \$ _____ to cover the recordal fee is enclosed.

22. The Commissioner is hereby authorized to credit overpayments or charge the following fees to Deposit Account No. 06-1205:

- a. ☒ Fees required under 37 CFR 1.16.
- b. ☒ Fees required under 37 CFR 1.17.
- c. ☐ Fees required under 37 CFR 1.18.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

| | |
|-----------|--|
| NAME | Abigail F. Cousins, Esq. (Reg. No. 29,292) |
| SIGNATURE | <i>Abigail Cousins</i> |
| DATE | March 8, 1999 |

35.C9525 D2/C/Div.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
KAZUHIRO SUGAWARA ET AL.) : Examiner: S. Rogers
Divisional of Appln. No.) : Group Art Unit: 2724
08/855,505, filed May 13, 1997)
Filed: Herewith)
For: COMMUNICATION SYSTEM) :
BETWEEN COMPUTER AND) :
FACSIMILE MACHINE) March 8, 1999

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to its examination, please amend the above-identified application as follows.

IN THE CLAIMS:

Cancel Claims 1-37 without prejudice.

Add Claims 38-69 as follows.

--38. A computer apparatus comprising:
reception means for receiving code data from a
device control apparatus, the device control apparatus
controlling a device in accordance with the code data
previously set; and

converting means for converting the code data received by said reception means into code data for displaying or printing.

39. An apparatus according to claim 38, wherein said converting means converts the code data into code data for a display connected to said computer apparatus.

40. An apparatus according to claim 38, wherein said converting means converts the code data into code data for a printer connected to said computer apparatus.

41. An apparatus according to claim 38, wherein said reception means receives the code data through a communication line.

42. An apparatus according to claim 41, wherein said reception means receives the code data through a public line.

43. An apparatus according to claim 38, wherein the device is an image formation device.

44. An apparatus according to claim 43, wherein the device is a facsimile device.

45. An apparatus according to claim 38, wherein said converting means performs the conversion to prevent character deformation.

46. An apparatus according to claim 38, wherein said converting means converts a key code for said device into a key code for said computer apparatus.

47. A computer apparatus comprising:

converting means for converting code data inputted from a keyboard into code data for a device control apparatus, the device control apparatus controlling a device in accordance with the code data previously set; and

transmission means for transmitting the code data converted by said converting means to the device control apparatus.

48. An apparatus according to claim 47, wherein said transmission means transmits the code data through a communication line.

49. An apparatus according to claim 48, wherein said transmission means transmits the code data through a public line.

50. An apparatus according to claim 47, wherein the device is an image formation device.

51. An apparatus according to claim 50, wherein the device is a facsimile device.

52. An apparatus according to claim 47, wherein said converting means performs the conversion to prevent character deformation.

53. An apparatus according to claim 47, wherein said converting means converts a key code for said computer apparatus into a key code for the device.

54. A control method of a computer apparatus, comprising:

a reception step of receiving code data from a device control apparatus, the device control apparatus controlling a device in accordance with the code data previously set; and

a converting step of converting the code data received in said reception step into code data for displaying or printing.

55. A method according to claim 54, wherein said converting step converts the code data into code data for a display connected to the computer apparatus.

56. A method according to claim 54, wherein said converting step converts the code data into code data for a printer connected to the computer apparatus.

57. A method according to claim 54, wherein said reception step receives the code data through a communication line.

58. A method according to claim 57, wherein said reception step receives the code data through a public line.

59. A method according to claim 54, wherein said reception step receives the code data through a communication line.

60. A method according to claim 59, wherein the device is a facsimile device.

61. A method according to claim 54, wherein said converting step performs the conversion to prevent character deformation.

62. A method according to claim 54, wherein said converting step converts a key code for the device into a key code for the computer apparatus.

63. A control method of a computer apparatus,
comprising:

a converting step of converting code data inputted
from a keyboard into code data for a device control
apparatus, the device control apparatus controlling a device
in accordance with the code data previously set; and

a transmissions step of transmitting the code data
converted in said converting step to the device control
apparatus.

64. A method according to claim 63, wherein said
transmission step transmits the code data through a
communication line.

65. A method according to claim 64, wherein said
transmission step transmits the code data through a public
line.

66. A method according to claim 63, wherein the
device is an image formation device.

67. A method according to claim 63, wherein the
device is a facsimile device.

68. A method according to claim 63, wherein said
converting step performs the conversion to prevent character
deformation.

69. A method according to claim 63, wherein said converting step converts a key code for the computer apparatus into a key code for the device.--

REMARKS

The purpose of the present Preliminary Amendment is to present the divisional claims.

An early and favorable action on the merits is respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

Abigail Cousins
Attorney for Applicants

Registration No. 29,292

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

A:\C9525.PA\rmd

- 1 -

1 Communication System between Computer and
 Facsimile Machine

BACKGROUND OF THE INVENTION

5 Field of the Invention

 The present invention relates to a data
communication system between computers and facsimile
machines.

Related Background Art

10 Hitherto, a multiplicity of entry information
items must be caused to enter a facsimile machine, for
example, shortened dials, user's telephone numbers,
abbreviated names and the like. The foregoing
information has been manually caused to enter and
15 read output by a service person or a user. Further,
investigations and adjustments have been performed by
the service man who has visited the place where the
facsimile machine is place. The internal information
in the facsimile machine has been read output and
20 setting has been changed. Further, the check sum has
been executed whenever one data item is received for
each entry information category.

 The initialization of the entry data has been
performed by a method in which the entry item is
25 initialized by using a data clear menu placed on a
control panel or another method in which the data is
initialized by using a clear key at the time of

1 entering (registering) the data.

However, the foregoing conventional facsimile machine involves a fact that one communication process is insufficient to enter a multiplicity of data items
5 at the time of the data entry operation. Another problem arises in that, if data is simply caused to enter at the time of the data entry process, abnormality of the entry data, if any, cannot be detected.

In the foregoing conventional process of
10 initializing the entry data to be performed by using the control panel, data change at the time of the remote data entry can be realized by only over-writing of data. Therefore, each entry data is initialized by selecting the clear key at the time of entering the
15 data. As a result, there arises a problem in that the data deletion operation is too complicated to be completed.

SUMMARY OF THE INVENTION

20 An object of the present invention is to provide a facsimile communication system in which both entry (registry) and reading of remote data are performed to generate entry confirmation data at the time of data entry or to initialize the entry data so
25 that the maintenance and service of the apparatus is facilitated.

Another object of the present invention is to

1 provide a facsimile communication system in which the
center side facsimile apparatus is able to confirm
remote entry data.

Another object of the present invention is to
5 provide a communication apparatus directed to overcome
the foregoing conventional problems and capable of
leaving hysteresis of data entry by way of communication
so that the functions of the destined apparatus and the
state of the communication are enabled to be known from
10 the host computer.

Another object of the present invention is to provide a remote data entry (registry) system and a facsimile apparatus directed to overcome the foregoing conventional problems and capable of causing remote facsimile apparatuses to prevent undesirable entry of data from the center.

Another object of the present invention is to provide a remote data entry system that allows a side for performing remote data entry to limit data which can be allowed to enter or which can be read out.

The present invention is directed to overcome the foregoing conventional problems and an object of the present invention is to provide a character data processing method for a facsimile apparatus which is arranged in such a manner that an entry character code from an external unit is converted by the external unit to correspond to an exclusive character code in a

1 facsimile apparatus connected to the external unit and
in a plurality of remote facsimile apparatuses to
which an access can be made by the facsimile apparatus
to be stored and managed so that characters having
5 different character codes among the external unit, the
facsimile apparatus and the plurality of remote
facsimile apparatuses to which an access can be made
by the facsimile apparatus are enabled to normally
enter or remote-enter the facsimile apparatus or the
10 plurality of remote facsimile apparatuses from the
external unit, the character data processing method
for a facsimile apparatus being able to reading entry
character data entered the facsimile apparatus and the
plurality of remote facsimile apparatuses to which an
15 access can be made by the facsimile apparatus from a
display means or a printing means of the external
apparatus to normally display or print the entry
character data.

Other and further objects, features and
20 advantages of the invention will be appear more fully
from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1A and 1B are views which illustrate a
25 facsimile communication system according to the
present invention;

Fig. 2 is a flow chart which illustrates the

1 procedure of the operation of the facsimile
communication system according to a first embodiment
to be performed at the time of remote data entry;

Figs. 3A and 3B are views which illustrate a
5 data entry menu and a data transmission menu according
to the first embodiment;

Fig. 4 is a view which illustrates a remote entry command according to the first embodiment;

Fig. 5 is a view which illustrate a remote
10 entry communication procedure according to the first
embodiment;

Fig. 6 is a view which illustrate a remote entry communication procedure according to the first embodiment;

15 Fig. 7 is a view which illustrate a remote
reading communication procedure according to the first
embodiment;

Figs. 8A to 8C are views which illustrate an HDLC frame format according to the first embodiment;

20 Fig. 9 is a view which illustrates the internal
memory structure of the facsimile apparatus according
to the first embodiment;

Fig. 10 is a table which illustrates the relationship between the internal memory structure of the facsimile apparatus according to the first embodiment and the check sum;

Fig. 11 is an operation flow chart for a

1 facsimile communication system according to a first
modification of the first embodiment;

Fig. 12 is an operation flow chart for a
facsimile communication system according to a second
5 modification;

Fig. 13 is a view which illustrates a remote
entry communication procedure according to the second
modification;

Fig. 14 is a view which illustrates a remote
10 entry communication procedure according to the second
modification;

Fig. 15 is a view which illustrates a remote
reading communication procedure according to the second
modification;

15 Fig. 16 is a view which illustrates a remote
reading communication procedure according to the second
modification;

Fig. 17 is comprised of Fig. 17A and Fig. 17B
showing operation flow charts of a facsimile
20 communication system according to a third modification;

Fig. 18 is a flow chart of a remote reading
operation procedure according to a second embodiment;

Fig. 19 is a view which illustrates remote
reading commands and remote entry according to the
25 second embodiment;

Fig. 20 is a view which illustrates the flow of
data in a PC at the time of receiving remote reading

1 identification procedure of a facsimile communication
system according to the third embodiment;

Fig. 31 is comprised of Fig. 31A and Fig. 31B
showing detailed flow charts of a data transfer

5 phase;

Fig. 32 is a detailed flow chart of a data
reading process;

Fig. 33 is a flow chart of a remote entry
operation procedure according to the third embodiment;

10 Fig. 34 is a flow chart of the remote entry
operation procedure according to the third embodiment;

Fig. 35 is a flow chart of the remote entry
operation procedure according to the third embodiment;

15 Fig. 36 is a flow chart of the remote entry
operation procedure according to the third embodiment;

Fig. 37 is comprised of Fig. 37A and Fig. 37B
showing flow charts of an entry procedure of the
facsimile communication system according to the third
embodiment;

20 Fig. 38 is a view which illustrates a remote
clear command according to another embodiment;

Fig. 39 is an operation flow chart of a
remote entry system according to a fourth embodiment;

25 Fig. 40 is an operation flow chart of the
remote entry system according to the fourth embodiment;

Fig. 41 is a view which illustrates an entry
data menu on a PC image plane of the remote entry system;

1 Figs. 42A to 42D are views which illustrate a
transfer command format of a PC data file of the remote
entry system by way of an interface RS-232C;

Figs. 43A and 43B are views which illustrate a
5 PC transfer command format of a data file of the remote
entry system by way of the interface RS-232C;

Fig. 44 is a flow chart of the operation of
the remote entry system by way of the interface RS-232C
to be performed when file writing is performed;

10 Fig. 45 is a flow chart of the operation of
the remote entry system by way of the interface RS-232C
to be performed when file reading is performed;

Fig. 46 is a view which illustrates a RMD
transmitting/receiving buffer of the remote entry system
15 according to the fourth embodiment and a fifth
embodiment;

Fig. 47 is a view which illustrates the RMD
transmitting/receiving buffer of the remote entry system
according to the fourth and fifth embodiments;

20 Fig. 48 is a view which illustrates an image
management table and an image memory of a facsimile
machine 1;

Fig. 49 is a flow chart for generating an image
management record in the facsimile machine 1;

25 Fig. 50 is a view which illustrates an example
of a log file according to the fourth embodiment;

Fig. 51 is a view which illustrates an example

1 of a log file according to the fifth embodiment;

Fig. 52 is a flow chart for generating a log file in the facsimile machine 1;

Fig. 53 is an operation flow chart of the
5 facsimile machine 1 of the remote entry system according to the fifth embodiment;

Fig. 54 is an operation flow chart of the facsimile machine 1 of the remote entry system according to the second embodiment;

10 Fig. 55 is an operation flow chart of a communication adapter of the remote entry system according to a sixth embodiment;

Fig. 56 is an operation flow chart of the facsimile machine 1 of the embodiment of an RMD
15 system;

Figs. 57A to 57C are views which illustrate a status command format by way of the interface RS-232C of the RMD system;

Figs. 58A to 58C are views which illustrate an
20 example of a status command response by way of the interface RS-232C of the RMD system;

Fig. 59 is an operation flow chart of the facsimile machine 1 of the embodiment of the RMD system;

25 Fig. 60 is an operation flow chart of the facsimile machine 1 of the embodiment of the RMD system;

1

5

command of the remote entry system by way of the
interface RS-232C;

10

writing procedure;

15

```
data menu on the PC image plane of the remote entry
system;
```

20

communication adapter of the remote entry system
according to an embodiment;

25

Fig. 71 is a structural view which illustrates

1 a RAM of the remote facsimile machine 2 according to
a twelfth embodiment;

Fig. 72 is an operation flow chart of the remote facsimile machine 2 according to the twelfth embodiment;

Fig. 73 is an operation flow chart of the remote facsimile machine 2 according to the twelfth embodiment;

Fig. 74 is an operation flow chart of the remote
10 facsimile machine 2 according to the twelfth embodiment;

Fig. 75 is an operation flow chart of the remote facsimile machine 2 according to the twelfth embodiment;

Fig. 76 is a view which illustrates the file structure and peripheral units of a personal computer according to a thirteenth embodiment;

Fig. 77 is a structural view which illustrates a machine type data base (a machine type DB and a user DB);

Fig. 78 is a structure view which illustrates
20 the machine type data base (the machine type DB);

Fig. 79 is a structure view which illustrates the machine type data base (the user DB);

Fig. 80 is a view which illustrates the structure of an image plane data base and a reference menu image plane of the image plane DB;

Fig. 81 is a flow chart which illustrates the procedure of the PC at the time of the remote entry;

1 Fig. 82 is a view which illustrates a mode
selection menu image plane;

 Fig. 83 is a view which illustrates an entry
level selection menu;

5 Fig. 84 is a view which illustrates a command
selection menu image plane;

 Fig. 85 is a view which illustrates the command
selection menu image plane;

10 Fig. 86 is a view which illustrates an entry
menu image plane (level 1);

 Fig. 87 is a view which illustrates an entry
menu image plane (level 2);

 Fig. 88 is a view which illustrates an entry
menu image plane (level 3);

15 Fig. 89 is a view which illustrates a one
touch/shortened dial entry menu (level 1);

 Fig. 90 is a view which illustrates a one
touch/shortened dial entry menu (level 2);

20 Fig. 91 is a view which illustrates an example
of a remote entry command;

 Fig. 92 is a view which illustrates a remote
reading menu image plane;

 Fig. 93 is a view which illustrates an
example of a remote reading command;

25 Fig. 94 is a view which illustrates an entry
level selection menu image plane (pass word is set);

 Fig. 95 is a flow chart of process of the PC

66060A "BUBBLE" 66060A

1 example of the procedure of the machine type
declaration phase of the character data processing
method;

Fig. 107 is comprised of Fig. 107A and Fig. 107B
5 showing flow charts which illustrate an example of
the procedure of a data transfer phase of the
character data processing method; and

Fig. 108 is a flow chart which illustrates an
example of the procedure of a data reading phase of the
10 character data processing method.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Preferred embodiments of the present invention
will now be described with reference to the drawings.

15 First Embodiment

Fig. 1A illustrates the unit arrangement for
executing a remote reading/entering (registering)
operation in a facsimile communication system according
to a first embodiment of the present invention. Fig.
20 1B illustrates the flow of data taken place in the
foregoing system. The facsimile communication system
according to this embodiment, as shown in Fig. 1A,
comprises a personal computer (PC) 3, a facsimile
machine 1 including an RS232C interface serving as a
25 facsimile adapter and another facsimile machine 2
capable of remote-reading the data.

The remote-reading operation is an operation to

1 be performed by the PC 3 to read, via the facsimile
machine 1, shortened dials caused to enter the
facsimile machine 2 or communication errors or the like.
The remote-entering operation is an operation to be
5 performed by the PC 3 to cause data about the shortened
dial and the like to be caused to enter the facsimile
machine 2 via the facsimile machine 1. In order to
remote-enter the data from the center side into the
facsimile machine 2, the PC 3 at the center displays
10 a data entry menu (see Fig. 3A) of a host program.
An operator then inputs data in accordance with the
entry menu. The operator inputs a connection number
with respect to the facsimile machine 2 connected to
a public circuit network 4 by using a data transmission
15 menu (see Fig. 3B) and selects "execution" included in
the menu.

As a result of the selection of "EXECUTION,"
the PC 3 transmits an entry command and data to the
facsimile machine 1 serving as the communication
20 adapter via the RS232C. The facsimile machine 1
serving as the communication adapter calls the
facsimile machine 2 connected to the public circuit
network 4. When the circuit is connected between the
two facsimile machines 1 and 2, the facsimile machine 1
25 transmits the entry command in the form of an HDLC frame
format (see Figs. 8A to 8C) with a 300 bps procedure
signal in accordance with a remote entry communication

1 procedure shown in Figs. 5 to 7.

It should be noted that symbols cr and lf are partition characters for the data entry command and the reading command and are expressed by carriage return (0DH) and line feed (0AH) in the ASCII characters. Symbols ff are partition characters denoting that data about the data entry command and that about reading command are continued to the next frame and are expressed by form field (0CH) in the ASCII characters.

The remote entry communication procedure is arranged in such a manner that a T.30 initial identification phase is, as shown in Fig. 5, defined as the entrance of the remote entry procedure. The remote facsimile machine 2 declares that it has a remote entry function in NSF (non-standard function). The facsimile machine 2 waits for NSS (non-standard function setting), which is the next machine type declaration to be supplied from the center side facsimile machine 1. The NSS contains a machine type reading command for the machine type declaration. When the facsimile machine 2 receives the foregoing command, the facsimile machine 2 makes a machine type declaration response by NSC (non-standard command). When the facsimile machine 1 receives the NSC, it transmits MCF (message confirmation).

When a response is made with the MCF by the

1 center, the process is shifted to an entry phase or a
reading phase as shown in Figs. 6 and 7. In the foregoing
entry phase, the facsimile machine 2 transmits the MCF
of the data transmission request command and receives
5 the NSS including entry data supplied from the facsimile
machine 1. If the entry of the entry data has succeeded,
it transmits an affirmative response by using a MCF.
If the entry has been failed, it transmits a negative
response by using an RTN (negative of re-training).

10 The data entry operation to be performed by the
facsimile machine 2 will now be described.

Fig. 2 is a flow chart which illustrates the
data entry procedure adapted to the facsimile machine
2. As shown in Fig. 2, the initial identification
15 procedure shown in Fig. 5 is executed in step S1.
Then, the entry phase is started. In the entry phase,
frames transmitted from the center side facsimile
machine 1 are, in step S2 and as shown in Fig. 8,
stored in a frame buffer in the form of the HDLC
20 format excluding flags, the center side facsimile
machine 1 being a facsimile machine which performs
the remote entry operation.

In next step S3, only frame entry data items
are accumulated in a data receiving buffer (see Fig.
25 9). If a discrimination is made in step S4 that an
identifier (see Figs. 8A, 8B and 8C) of the frame
final data is two-byte data (cr = 0DH, lf = 0HA)

1 denoting the completion of the data, the flow proceeds
to step S5. If a discrimination is made in step S4
that the identifier is one-byte data (ff = 0CH) (see
Fig. 8B) denoting that data continued to continuation
5 frame is present, the flow returns to step S2 to receive
the next data.

If the final frame has been received, the
command in the buffer memory is analyzed in step S5.
If the command is the data entry command (step S6),
10 it is stored in a memory area for entry data
corresponding to the entry item (step S8). In step
S9, check sum (calculations for summing the data in
the memory region for each entry item to confirm the
entry) is performed, the contents of the check sum
15 being also stored. The data about the check sum is
used at the time of checking the memory when power is
supplied to the facsimile machine 2.

If the data entry has succeeded, an affirmative
response is transmitted in step S10. If the entry
20 has been failed, a negative response is transmitted
in step S11 and transmission of the next data is
waited for. Finally, a completion signal is received
from the center side facsimile machine 1 (if an
affirmative discrimination is made in step S12), the
25 remote entry communication is completed. It should be
noted that step S7 is a data reading phase shown in
Fig. 7. The check sum to be performed in step S9 may

1 be performed in such a manner that

(1) the calculations of summing the byte data in the respective addresses in only the memory region for the entry item are performed; or

5 (2) the respective address data items in all
entry memory regions are summed as well as the entry
data area; or the like.

The results are, as the check sum, written on the check sum data.

10 The check sum for each storage area (a user
data region and a TEL data region) for the entry
data is calculated. Further, the sum of all binary
data items in the foregoing regions is obtained.
For example, first data 00H (H denotes hexadecimal
15 notation) to FFH in the user data region are, for
example, calculated as follows:

$$\begin{aligned}
& 00H + FFH + 00H + FFH + 33H + \dots + \\
& 34H + FFH + FFH + FFH + FFH + FFH \\
& = \text{SUM (a)} \qquad \dots (1)
\end{aligned}$$

20 Then, the results are stored in the user data
 (a) in the check sum data entry area. Although digit
overflow takes place if the sum is obtained by 2-byte
data because the check sum is caused to enter by an
unsigned in type, the calculation is performed in
25 this embodiment regardless of the overflow.

When power is supplied to the facsimile machine 2, similar check sum calculations are performed to be

1 now be described.

Fig. 11 is a flow chart of the operation of a modification of the facsimile machine 2 according to the first embodiment. In this modification, the facsimile machine 1 transmits data in the form in which only one command is present in one frame. As shown in Fig. 11, the initial identification procedure is executed in step S21 similarly to the foregoing embodiment. In step S22, the procedure signal received via the circuit, is recorded into the buffer memory. In step S23, recording to the entry memory is performed, and calculations and storage of the check sum are performed in step S24. In ensuing steps S25 and S26, response about the fact that data entry could be executed (success of the entry) or the entry could not be performed (fail of the entry) is transmitted.

Finally, a completion signal is received from the center. If an affirmative discrimination has been made in step S27, the remote entry communication process is completed here.

Since this modification enables the remote data entry operation to be completed in one frame transmission, the data quantity can be reduced. Therefore, the system can be formed by limiting data to the entry items that can be caused to enter at one frame receipt.

Also this modification executes the remote

1 entry of the facsimile data, the side (the center)
for executing the remote entry selects the entry menu
(see Fig. 3A) of the host program on the personal
computer (PC) and inputs the data in accordance
5 with the entry menu. Then, the data transmission menu
(see Fig. 3B) is used to input the connection number
with respect to the facsimile machine connected to the
public circuit, and then "EXECUTION" in the menu is
selected. As a result, the PC transmits the entry
10 command and the data (see Fig. 4) to the facsimile
machine 1.

The facsimile machine 1 transmits the
connection number to the public circuit to enable the
communication with the facsimile machine 2 to be
15 performed. Further, the remote entry communication
procedure shown in Figs. 5 to 7 is used to transmit
the entry command in response to the 300 bps procedure
signal in the form of the HDLC frame format (see Figs.
8A to 8C) in such a manner that limitation to one
20 entry data for one frame is made.

As described above, according to this
modification, the program memory can be reduced
because the program data working region is not used
though a large quantity of entry data cannot be
25 processed within one entry operation. Further, the
communication can be completed quickly because the
time needed to analyze the data as is needed in step

1 S5 shown in Fig. 5 can be shortened.

A second modification of the facsimile communication system according to the present invention will now be described. This modification
5 is arranged in such a manner that all frames transmitted to a large-capacity image buffer within one communication are temporarily stored until all frames are received and then the data entry operation is commenced.

10 Figs. 13 to 16 illustrate the remote entry communication procedure according to this modification. In this modification, the machine type declaration phase in the remote entry is defined to be the entry of the remote entry procedure. The center, in this
15 phase, confirms the remote entry function and the machine type of the facsimile machine (see Fig. 13). The center then performs the training shown in Fig. 14 and transmits the VFR, and then the center side facsimile machine 1 transmits the entry command and
20 the data (see Fig. 4) in the HDLC format in place of the image data. A data capacity of 64K bytes can be, in this case, transmitted in one transmission.

When the facsimile machine 2 has received the data, it checks the transmission error of each received
25 frame by using the FCS (see Figs. 8A to 8C) of the HDLC frame. If a transmission error has been committed, it transmits retransfer signal PPR to the center side

1 facsimile machine 1 to receive again the frame. If
all frames have been normally received, the facsimile
machine 2 commences the entry operation. However, a
fact that the entry process is being performed is, by
5 transmitting the RNR, informed to the center side
facsimile machine 1 because no response is made until
the entry operation is completed. As a result, the
center side facsimile machine 1 transmits the PR and
waits for the completion of the entry.

10 After the entry process has been completed,
the facsimile machine 2 transmits the MCF and waits
for the next signal. If the next data is present,
the center side facsimile machine 1 transmits the DCN
and the communication is completed.

15 Fig. 12 is a flow chart which illustrates the
operation of the facsimile machine 2 according to the
second modification of the foregoing embodiment. As
shown in Fig. 12, the initial identification procedure
is performed in step S31, and the entry data received
20 as 9600 bps image data is, in step S32, stored in
the image buffer shown in Fig. 9. After the final
frame has been received (an affirmative discrimination
is made in step S33), the command in the image buffer
is analyzed to record it in the entry data memory
25 corresponding to the entry item (steps S34, S35 and
S37). It should be noted that the RNR is transmitted
to the center during the entry operation.

1 After the entry has been completed in step S37,
the check sum calculation is performed in step S38 to
also store the contents of the check sum into the
memory. In next steps S39 and S40, an affirmative
5 response is transmitted if the entry has succeeded.
If the entry has failed, a negative response is
transmitted. Then, the transmission of the next data
is waited for.

Finally, the completion signal DCN is received
10 from the center side facsimile machine 1 in step S41,
the remote entry communication is completed.

As described above, this modification enables a plurality of entry items and a plurality of data items to be allowed to enter collectively within one communication. Further, the contents of the remote command can arbitrarily determined. Therefore, a complicated entry operation, that cannot be usually manually completed, can be completed.

Figs. 17A and 17B are flow charts which illustrate the operation of the facsimile machine 2 according to the third modification. As shown in Figs. 17A and 17B, the initial identification procedure is executed in step S51. In step S52, the HDLC signal received by way of the circuit is stored into the frame buffer. If a discrimination has been made in step S53 that the entry execution command is present in the final data of the frame, the flow

1 to enter while omitting handling of the binary data
to prevent erroneous identification between the
identifier and the data.

The data continuation flag is used to judge
5 at the time of interruption data receipt without a
command at the time of the data entry. If the
foregoing flag has been turned on, a fact is shown
that additional data is present in the previously
entry item.

10 As described above, this modification enables
the limitation of the quantity of the entry data to be
omitted if the capacity of the receiving buffer is too
small. For example, remote entry to a facsimile
machine, such as a personal facsimile machine, that
15 has a small memory capacity.

Second Embodiment

A remote reading operation of a facsimile
communication system according to this embodiment will
now be described.

20 The remote reading operation according to this
embodiment is arranged in such a manner that: the data
receiving menu (see Figs. 3A and 3B) on the image screen
of the PC 3 in the remote center is first used so that
reading items, such as user data, one touch/shortened
25 dials and service data, are selected, the connection
No. is inputted to the remote facsimile machine and
the execution menu is selected. Then, the PC 3

1 embodiment is performed in accordance with the foregoing communication procedure.

When the facsimile machine 1 has received the data transfer command (NSF) from the facsimile machine 2, it transmits the remote reading command shown in Fig. 19 by using the NSS. When the NSC has been used so that the reading data in accordance with the contents of the remote reading command has been transmitted from the facsimile machine 2 to the facsimile machine 1, the facsimile machine 1 responds the reading data and waits for the next reading data. When the final data has been received, the NSF of the data transfer command is transmitted from the facsimile machine 2. Therefore, a circuit disconnection command (DCN) is transmitted from the remote reading facsimile machine 1 to complete the communication process.

Fig. 18 is a flow chart which illustrates the procedure of the remote reading operation according to this embodiment. As shown in Fig. 18, the initial identification procedure is executed in step S71. In next step S72, the data received by the facsimile machine 2 is temporarily stored in the frame buffer in the form of the HDLC frame according to the first embodiment shown in Figs. 8A to 8C.

In step S73, the reading command in the HDLC frame is accumulated in the data receiving buffer

1 (RMD buffer) in the memory shown in Fig. 9. After the
reading commands have been accumulated, the command of
the data receiving buffer is analyzed in steps S74 and
S75. In step S77, the reading data corresponding to
5 the foregoing command is accumulated in the data
transmitting buffer.

After all reading data items have been written
on the data transmitting buffer, the transmission of
the reading data is commenced. The data transmission
10 is repeated until no data is present (steps S78 and
S79). If the data accumulation is failed or no
transmission data is present any more, the NSF (data
request command) is transmitted to wait for the
transmission of the next data.

15 When the completion signal (DCN) has been
finally received from the facsimile machine 1, the
remote reading operation is completed (step S81).

As described above, the embodiment enables a
plurality of reading items and a plurality of data
20 items to be collectively read in one communication.
Further, the data items can collectively be accumulated
in the transmitting buffer. Therefore, a large quantity
of data can be remote-read so far as the capacity of
the buffer permits.

25 The remote reading process and the remote entry
process can be performed alternately to be completed
in one communication.

1 Then, modifications of this embodiment will
now be described.

Fig. 21 is a flow chart which illustrates the
operation of the facsimile communication system
5 according to a first modification of the second
embodiment. Figs. 22 to 24 are views which illustrate
the remote reading communication procedure according
to this modification. In this modification, high
speed procedures adapted to 9600 bps and 4800 bps are
10 employed.

The entrance of the remote reading communication
procedure of the system according to this modification
is the low-speed procedure of the remote communication,
that is, the function of the facsimile machine about
15 remote reading and the machine type declaration phase
for confirming the function as shown in Fig. 22.

Then, training (see Fig. 22) is performed to
determine the communication rate of the facsimile
machine before the flow is shifted to the data reading
20 phase (see Fig. 23) or the data entry phase (see Fig.
24). In this data reading phase, the data reading
command is, in the HDLC frame format (see Figs. 8A to 8C),
received from the facsimile machine 1. The facsimile
machine 2 checks the transmission error of each of
25 the received frames by the FCS (Frame Check Sequence)
of the HDLC frame after it has received the data.

If the frame includes a transmission error, the

1 facsimile machine 2 transmits the re-transfer request
signal PPR and again receives the frame. If all
frames have been normally received, the reading data
transmission operation is commenced. Since the
5 facsimile machine 1 does not respond until the
reading operation is completed, the facsimile machine
1 notifies the fact that it is performing the reading
process upon receipt of the RNR to the facsimile machine
2. The facsimile machine 2 transmits the RR and waits
10 for the completion of the reading operation.

After the reading process has been completed,
the facsimile machine 1 transmits the normal reading
response (MCF). Therefore, the facsimile machine 2
transmits the data transfer request signal (NSF) and
15 waits for the transmission of the next command. When
the circuit disconnection command (DCN) has been
transmitted from the facsimile machine 1, the
communication process is completed here.

Referring to the flow chart shown in Fig. 21,
20 the operation of the facsimile communication system
according to this modification will now be described.
In step S91, the initial identification procedure is
executed. In step S92, the foregoing training is
performed. In step S93, the received image data in
25 the form of the HDLC format is accumulated in the
image buffer. When the final frame has been received,
the transmission error in the image data is checked

1 (step S95) and the accumulation of the image data is
repeated until all data is normally received.

If a discrimination has been made in step S95
that the image data includes an error, the data
5 retransfer is requested in step S94.

In steps S96 and S97, the remote reading
command received as the image data is analyzed to
accumulate the reading data to be transmitted to the
remote reading center is accumulated in another image
10 buffer which is different from the image buffer to
be used in the storage operation to be performed in
step S93. When all data items have been accumulated,
the data transmission is performed (steps S99 and
S100).

15 When the transmission of the reading data has been
completed, the completion of the operation of the center
is waited for. If the response (MCF) from the center
has been received, the transfer request command (NSF)
is transmitted (steps S101 and S102). The center
20 transmits the DCN if no next data transmission is
made. Thus, the remote reading operation of the
facsimile machine is completed (step S103).

Fig. 26 is a flow chart which illustrates the
operation of the facsimile machine 2 according to the
25 second modification of the second embodiment.

According to the flow chart shown in Fig. 26, the
initial identification procedure is executed in

1 remote reading operation is completed (step S121).

Since this modification is so arranged that the data transmission is performed simultaneously with the data storage process if the capacity of the remote reading data buffer is too small. Therefore, a large quantity of the reading data can be transmitted.

Third Embodiment

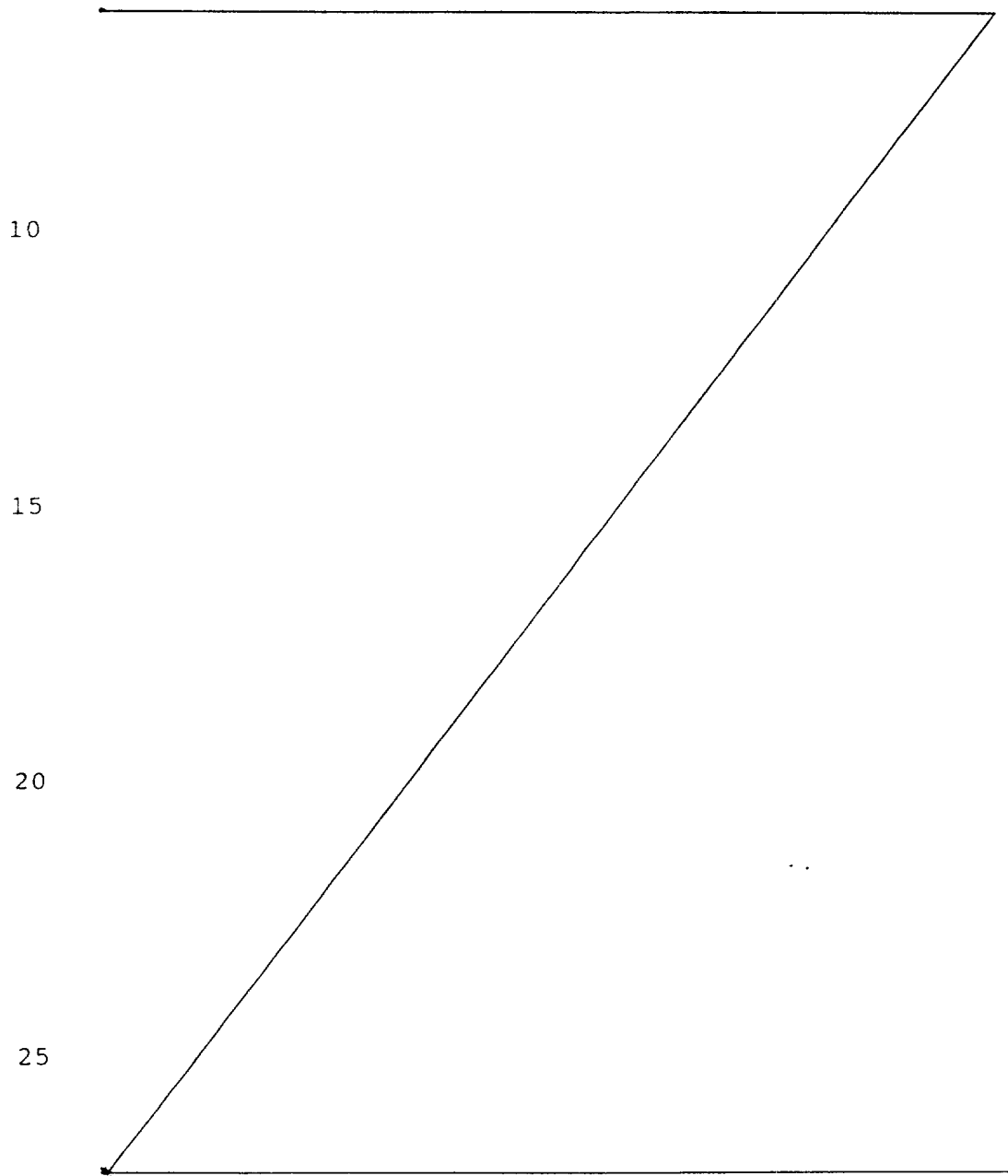
A third embodiment of the present invention will now be described. Since the structure of the facsimile communication system according to this embodiment is made to be the same as the system according to the first embodiment shown in Figs. 1A and 1B, the illustration of the system is omitted here.

In this embodiment, the facsimile machine is initialized at the time of the remote entry process, the data entry menu is selected on the center side personal computer (PC) 3. Further, data initialization (clear) is selected on the input image plane of each entry data to execute the data transmission.

Fig. 26 is a view which illustrates an example of the entry menu of the one touch/shortened dial. Fig. 27 illustrates the menu for clearing the memory, and Fig. 28 illustrates a data transmission menu.

When the entry data is cleared on the menu shown in Fig. 26, the number of the one touch/shortened dial is selected. Further, the entry data read by the remote terminal is displayed on the entry menu so

1 that the change entry of the data are enabled. In
 addition, the cursor is shifted to the item for
 clearing the data and a clear key (F5) is depressed
 so that the entry data is deleted from the image
 5 plane.



1 After the change entry operation has been
completed, a data transmission menu shown in Fig.
28 is selected to transmit the changed data. Then,
the PC makes a command file about the clear data and
5 the changed data in response to a command similar
to the remote entry command according to the second
embodiment shown in Fig. 19. The partition characters
for each data are determined to be a carriage return
(cr: 0DH) and a line field (lf: 0AH). The command
10 file is made when the transmission is executed with
the data transmission menu and transmitted to the
facsimile machine 1 by way of the RS-232C interface.

The form of the clear data in the command
file is categorized into the following two types:

- 15 (1) In order to perform the data initialization
operation by writing the clear data with the initial
value, the data entry command and the initial value
data are transmitted from the PC to the center side
facsimile machine.
- 20 (2) If no data about clear of the telephone number, and
the abbreviated name is present, the initial value
of the data is not present. Therefore, a command,
to which no data is added, is processed as a data
clear command so that the data is cleared.

25 The following command files are present for
clearing the data:

| | | |
|----|--------------------|--|
| 1 | DI01crlf | abut one touch dial 01 |
| | DTcrlf | deletion of entry |
| | DI02crlf | about one touch dial 02 |
| | DT03 3765 6854crlf | entry of telephone number |
| 5 | DNcrlf | clearing of destination abbreviation |
| | DScrlf | clearing of transmission rate with initial value |
| | DOcrlf | clearing of setting of overseas transmission mode with initial value |
| 10 | | |

The center facsimile machine 1 accumulates the clear data as the remote entry command file and receives a command to transmit the command file from the PC 3 so that the data clear communication is commenced. The remote communication is performed by the same procedure as that of the remote entry procedure according to the first embodiment shown in Figs. 5 to 7 in such a manner that the center facsimile machine 1 initializes the entry data of the remote facsimile machine similarly to the remote entry process.

Figs. 29 and 30 are flow charts which illustrate the initial identification procedure to be performed by the facsimile communication system according to this embodiment.

As shown in Fig. 29, the type of the facsimile

1 machine, which is the remote terminal, and whether
or not it has the remote entry function (RMD bit)
are confirmed by the NSF (non-standard function) in
step S151. If the remote entry function bit is
5 present in the NSF in step S152, CSI is stored and
a parameter is set by the DIS in step S153. In next
step S154, NSS/TSI/DCS are transmitted to commence
the machine type confirmation process in the remote
entry operation.

10 If no RMD bit is present in the NSF in step
S152, the DCN (the disconnection command) is transmitted
in step S156 so that the communication process is
forcible completed.

If the response receipt is made in step S155
15 and if the NSC (the non-standard function command),
which is the response to the NSS (non-standard function
setting), is received in step S201 shown in Fig. 30,
the remote entry function bit of the NSC is confirmed
in next step S202. In accordance with the result
20 of the confirmation, data about the machine type,
destination and the ROM version and the like included
in the NSC data field is, in step S203, stored in
the file in the center facsimile machine. The center
facsimile machine transmits the MCF (message confirma-
25 tion) in step S204. In step S206, the command is
received, and the flow is shifted to the data transfer
phase in step S209.

1 If the response receipt is not made in step
S155, the foregoing processes in steps S154 and S155
are repeated three times. If no response is made
here, the DCN is transmitted in step S158. Thus,
5 the foregoing process is completed. If the command
receipt process in step S206 is resulted in the time
over of T2 hours (if an affirmative discrimination
is made), the DCN is transmitted in step S208. Thus,
the process is completed.

10 Figs. 31A and 31B are detailed flow charts
for the data transfer phase shown in step S209 of
Fig. 30. In step S161 shown in Figs. 31A and 31B,
the NSF is confirmed. If it has been confirmed, a
discrimination is made in step S162 whether or not
15 the RMD bit of the remote entry function is present
in the NSF. If the bit is present, a discrimination
is made in step S163 whether or not the transmission
data with the next NSS is present.

 If an affirmative result has been made in
20 step S163, the NSS is transmitted in step S164 in
which a response from the remote facsimile machine
is made (an affirmative discrimination is made in
step S166). If a discrimination is made in step S167
that the response is the MCF denoting the affirmative
25 response, the flow returns to step S163. If the
response is not the MCF but it is RTN (negation of
the retraining) (if an affirmative discrimination

1 is made in step S168), a discrimination is made in
step S170 to complete the process by transmitting
the DCN in step S171 or to return to step S163 while
regarding the response, the discrimination being made
5 in accordance with setting of the center side facsimile
machine.

If a negative discrimination is made in step
S166, the processes in steps S164 and S166 are repeated
three times (the number is discriminated in step S175).

10 If no response is obtained, a discrimination is made
that no transmission data is present in the command
file. Then, the DCN is transmitted in step S176,
and the process is completed.

If the RTN is not received in step S168, the
15 receipt of the NSC is discriminated in step S169.
If the NSC has been received, a data reading process
to be described later is commenced (step S177).

Fig. 32 is a detailed flow chart of the data
reading process in step S177 shown in Figs. 31A and
20 31B.

In step S181 shown in Fig. 32, the NSC data
received in step S169 shown in Figs. 31A and 31B is
stored in the file. If the page time does not flow
over in step S182, the MCF is transmitted in next
25 step S183. If the overflow takes place, the flow
is shifted to the DCN transmission in step S184.

After the command has been received in step

660000 3034900

1 S185, the NSC is received in step S186. If the NSC
has been received, the flow returns to step S181.
If the NSC has not been received, the flow proceeds
to step S187 in which a data transfer phase is commenced.
5 The command receipt process in step S185 is performed
in such a manner that, if a discrimination is made
is step S188 that the time over of T2 hour takes place
the DCN is transmitted in step S189 and the process
is completed.

10 In the foregoing remote entry operation, the
center side facsimile machine 1 only transmits the
data to the facsimile machine 2 but it does not perform
the operations relating to the remote entry process.
Further, the data transmission state is monitored
15 by the PC 3 by way of the interface RS-232C during
the communication. After the communication has been
completed, a command to delete the command file is
transmitted from the PC 3. As a result, the center
side facsimile machine 1 deletes the command file
20 and the data entry process is completed.

The remote entry operation procedure of the
facsimile machine 2 will now be described.

Figs. 33 to 36 are flow charts which illustrate
the remote entry operation procedure according to
25 this embodiment.

As shown in Fig. 33, the remote facsimile
machine 2, in step S301, transmits NSF/CSI/DIS in

1 accordance with the G3 facsimile communication procedure
(T.30) in response to call made by the center side
facsimile machine 1. Then, the response is waited
for in step S302. At this time, a fact that the remote
5 entry/reading function is possessed is notified to
the center side facsimile machine 1 by turning on
the RMD bit of the NSF.

If no response is made in step S302, the flow
proceeds to step S304 in which the time over of T1
10 hours is counted. If the time over takes place, the
circuit is disconnected in step S305. If the response
is made, the remote entry communication procedure
is confirmed with the NSS transmitted from the center
side facsimile machine 1 in step S303. If it has
15 been confirmed, the storage of the CIG and the DTC
parameter setting are performed in step S306.

In step S307, a discrimination is made whether
or not the RMD bit of the NSS is turned on. If the
bit is turned on, the communication is commenced in
20 accordance with the procedure T.30 of the RMD in step
S311. If a discrimination has been made in step S307
that the RMD bit of the NSS is not turned on, a
discrimination is made that the subject procedure
is not the remote communication procedure. The flow
25 proceeds to step S308 in which the facsimile communica-
tion is performed in accordance with the usual T.30.

The remote facsimile machine writes data about

- 1 the machine type, the destination, and the ROM version
and the like on the data field of the NSC in accordance
with the command in the NSS transmitted from the center
side facsimile machine, the data being then transmitted.
- 5 The center side facsimile machine 1 stores the data
and transmits the MCF response so that the data
entry/reading phase is commenced.

Fig. 34 is a detailed flow chart of T.30 of
the RMD (Remote Diagnostic) in step S311 shown in
10 Fig. 33. In step S315, the NSC is transmitted, the
response is received in step S316 and the NSS is
confirmed in step S317.

- If the response receipt has been confirmed,
the data transfer phase in step S320 is commenced.
- 15 If the response cannot be confirmed in step S316,
the processes in steps S315 and S316 are repeated
three times (the number of times is counted in step
S318). If the response is not made within the number
of times, the flow proceeds to step S319 in which
 - 20 the DCN is transmitted.

Fig. 35 is a detailed flow chart of the data
transfer phase. In the phase shown in Fig. 35, the
facsimile machine 2 transmits the data transfer request
command NSF in step S331, and the response is confirmed
25 in step S332. In next step S333, the entry and reading
command in the NSS transmitted from the center is
waited for.

1 When the facsimile machine 2 receives the
NSS, it analyzes the command and data in the NSS.
If the command and the data are correct data (if an
affirmative discrimination is made in step S336),
5 a discrimination is made in step S337 that the received
command is the RMD data reading command or the entry
request command. If the command is the reading command,
the flow proceeds to step S338 in which the reading
process (to be described later) is performed. If
10 the command is the entry request command, the MCF
is transmitted in step S339, and the command receipt
is discriminated in step S340.

Fig. 36 is a detailed flow chart of the reading
process. As shown in Fig. 36, a discrimination is
15 made in step S351 whether or not the transference
of the RMD reading data has been completed. If the
data transference has been completed, the flow proceeds
to step S357, that is the data transfer phase. If
the data transfer has not been completed, the NSC
20 is transmitted in step S352, and the response receipt
is waited for in next step S353.

If the response cannot be confirmed in step
S353, the processes in steps S352 and S353 are repeated
three times (the number of times is counted in step
25 S355). If no response is made within the times, the
flow proceeds to in step S356 in which the DCN is
transmitted.

1 Then, the entry processing procedure according
to this embodiment will now be described.

 Figs. 37A and 37B are flow charts which
illustrate the entry procedure of the facsimile machine
5 2 according to this embodiment. As shown in Figs.
37A and 37B, when the circuit has been established
with the remote center side facsimile machine 1, the
initial identification procedure is executed in step
S401. In next step S402, the transmitted NSS signal
10 is stored in the frame buffer, and the entry data
in the NSS is stored in the remote entry data buffer
in step S403.

 In step S404, a discrimination is made whether
or not the data is the final data, and then the data
15 analysis process is commenced in step S405. In step
S406, a discrimination is made whether or not the
data entry is made. The analysis of the stored data
is performed in such a manner that the data entry
item is determined in accordance with the entry command
20 and the entry data is recorded in the item. In step
S408, branching is realized depending upon whether
or not data is accompanying with the command. It
should be noted that the initialization process is
also performed at the time of the command analysis.

25 If the data accompanying with the transmitted
command is the previous initialize data, that is,
if an affirmative discrimination is made in step S408,

1 the initialization is performed in the data entry
process in step S409. If no data is accompanying
with the transmitted command, the data is deleted
as the initialization process in step S410. For
5 example, if the data is the destine number of the one
touch/shortened dial, the entry of the one touch/
shortened dial number is deleted. The abbreviated
destination name or the like is processed in such
a manner that the entry contents are cleared.

10 The foregoing process is continued until the
data transmission from the center side facsimile machine
1 is completed. In step S413, a discrimination is
made whether or not the entry process has been completed
normally. If the entry process has been completed
15 normally, the MCF of the affirmative response is
transmitted in step S415 and the next command is waited
for. If the entry process has been failed, the RTN
which is the negative response is transmitted in step
S414 and next command is waited for. If the receipt
20 of the completion signal has been confirmed in next
step S416, that is, if the DCN denoting the completion
of transmission of the command file has been transmitted
from the center side facsimile machine 1, the remote
entry process is completed.

25 As described above, this embodiment enable
the process for initializing each item of the facsimile
machine to be performed in a remote manner by the

650000 3034900

1 remote data initialization. Therefore, the entry
data and various software switches can be initialized
while omitting the necessity for the service person
to visit the user.

5 Further, the remote initialization can be
executed simultaneously with the remote entry.
Therefore, if the initialization process accompanies
the process for changing the entry data, it can be
completed in a remote manner.

10 The contents to be cleared in the remote
initialization may be performed in the overall memory
region relating to a certain entry item. In order
to achieve this, the PC menu shown in Fig. 27 is used
to simultaneously execute the input of the connection
15 N and the data transmission. In order to perform
a partial initialization of the memory region, a remote
command shown in Fig. 38 is used.

The initialization may be performed by using
the entry process procedure according to the third
20 embodiment. In the data entry process in step S409,
when the command shown in Fig. 38 is received, the
memory defined by the command is cleared. The foregoing
clear process is performed in such a manner that the
user data or the one touch shortened dial are cleared
25 by deleting all entered data items. The service
software switches and the user software switches are
processed in such a manner that the entry data is

1 set to the initial value (default).

The foregoing method is effective in a case where all data items are cleared in the data initialization operation.

5 The present invention may be applied to a system composed of a plurality of units or a sole apparatus.

As described above, reading of remote data and entry are performed simultaneously so that the
10 entry data is initialized in a remote manner at the time of the remote data entry or the entry confirmation data is generated. As a result, if the entry data is crushed, the abnormality can be detected.

Further, the maintenance and service of the
15 apparatus can easily be performed by displaying the entry data on the center facsimile machine.

Fourth Embodiment

The facsimile machine 2 according to this embodiment has a DRAM for storing a large-size data
20 file such as image data, the DRAM having a region for use a working region and as a transmitting/receiving buffer and the like.

<Data Entry process (Data Registry process)>

At the time of the data entry, the user first
25 inputs the entry data to the remote facsimile machine 2 by using the host program on the PC 3 in accordance with a menu shown in Fig. 41. The PC 3 transmits,

1 together with command to serve as the entry command,
the supplied data to the facsimile machine 1 by way
of the RS232C.

The flow of the operation of the facsimile
5 machine 1 serving as a communication adapter to be
performed at the time of receiving the entry data
is shown in Fig. 39. The data entry command can be
said that it is a variation of the file write command.
When the command is received, a file is made from
10 the supplied data in accordance with the file write
command process in step S501.

In step S501, the facsimile machine 1 is
operated as shown in Fig. 44 when the entry data has
been transmitted from the PC 3. The foregoing process
15 is the same as the process to be performed when the
facsimile machine 1 has received the file write command
from the PC 3.

Making of Entry Data File (Registry Data File)

First a management record of a file to be
20 made is obtained onto an image management table to
obtain a file region from the DRAM. The management
record corresponds to the image file and the entry
data file and the like as shown in Fig. 48. When
a region has been obtained on the DRAM, ACK is sent
25 out. If no region has been obtained, NACK is sent
out (steps S601 to S604). When the management record
of the entry data file is made, the file is given

1 the file number.

Then, data supplied from the PC 3 obtained by way of the interface RS232C is sequentially stored in an exclusive buffer. At this time, the data must be composed of an ASCII code and a control code, the data start must be "DT =" and the end of the data must be Q = eop. Therefore, when the data is received (step S605), whether or not the start of the data is "DT =" is checked (step S606). If an affirmative result is obtained, the data receipt is continued (step S607). While storing the received data into the buffer, the data is analyzed in a non-synchronous manner. The data is, in one line units (receipt of "crlf" denotes the completion of one line), transferred from the buffer to an image area on the DRAM. The process for each one line is repeated until the data transfer is completed. Thus, the data file is closed. That is, when "crlf" is received (step S608), a discrimination is made that one line is completed, causing data for one line is written into the file formed in the DRAM (step S609).

The transmitting buffer according to this embodiment means an RMD transmission file shown in Fig. 46. The foregoing file is the same as the RMD entry data file and serves as a region for storing data supplied from the PC 3 and also serves as a region for the entry data to be transmitted to the remote

1 facsimile machine 2. The receiving buffer is the
RMD receipt file shown in Fig. 46. The foregoing
file is the same as an RMD log file, the file being
a region for storing the signal received from the
5 remote facsimile machine and the transmission signal
of the communication adapter and also a region for
recording the log.

The entry data file is, as shown in Fig. 48,
made in the same file as that for the image file to
10 be made at the time of the image communication operation
to be performed by the facsimile machine. Therefore,
the entry data and the image data can be handled
similarly, and an image can be written into an image
area of the remote facsimile machine 2 by a similar
15 method for the entry data.

While processing the data, Q given to the trailing portion of the data is tested. If the result is "EOP", a discrimination is made that the procedure is completed, and the file is closed (step S611).

20 If the result is "EOM" or "MPS", a status command ensuing the data is received from the PC 1 (step S612). In accordance with the foregoing command, the file number given at the time of making the management record is, as status information, transmitted to the PC 1

25 by way of the interface RS232C (step S613).

The command for use in the procedure shown in Fig. 44 and its response are shown in Figs. 42A

1 to 42D. Fig. 42A and Fig. 42B are continue, Fig.
42C illustrates the format of a file write command,
and Fig. 42D illustrates the contents of a status
command 52.

5 Making of Log File

When making of the entry data file in step
S501 has been completed as described above, the flow
proceeds to step S502 in which the log file is made
in the image area on the DRAM. The procedure for
10 making the log file is shown in a flow chart shown
in Fig. 49.

The log file is opened such that the file
number of the latest image file (the term "image file"
is the name including the entry data and the log file)
15 is examined (steps S801 and S802), and then the file
number is given to correspond to the result of the
examination (step S803). Then, the management record
of the log file is, similarly to the entry data file,
obtained on to the image management table. In order
20 to obtain it, examinations are performed whether or
not the management record region can be obtained on
the image management table and whether or not the
file region can be obtained on the DRAM (step S804).
If they can be obtained, a management record is made
25 (step S806) so that the log file can be opened in
the image file region (step S807). The management
record can be managed with the file number (corresponding

1 to the file) which is the member. The file number is
increased by one from the previous file number at the
time of obtaining the image management record on to
the image management table. Assuming that the file
5 number of the entry data file is 100, and the file
number of the log file is 101 (see Fig. 48).

Connection and Initialization of Circuit

When the entry data file and the log file
have been opened as described above, the facsimile
10 machine 1 calls the facsimile machine 2 in the public
circuit network in step S503. If the circuit has
been connected, the entry data form is converted into
a transmission signal in the 300 bps HDLC frame format
shown in Figs. 8A to 8C in accordance with a remote entry
15 communication procedure and it is transmitted in step
S504. The remote entry communication procedure has
the introduction thereof which is the T.30 initial
identification phase shown in Fig. 5. That is, the
message change shown in Fig. 5 is performed in step
20 S504. In this phase, the rate of the ensuing communica-
tion is set to a high speed procedure of 9600 bps
or 4800 bps. The remote facsimile machine 2 which
has received the entry data declares that it has the
remote entry function in the NSF (Non-Standard Function).
25 The facsimile machine 1, which has received the
declaration, issues a machine type request command,
which is the machine type reading command, to the

66060 3034360

1 remote facsimile machine 2 and waits for the machine
type declaration response. The facsimile machine
1 then waits for the machine type declaration response.
The machine type request command is issued in the
5 NSS (Non-Standard Function). When the NSC (Non-
Standard Function) of the machine declaration response
has been received, the MCF (Message Confirmation)
denoting the completion of the machine type declaration
is transmitted. When the machine type declaration
10 phase has been completed, the remote entry procedure
is shifted to the data entry phase shown in Fig. 6.
(Writing to Entry Data File and Log File)

In the data entry phase, the facsimile machine
1 receives the NSF, which is the data transfer request
15 command supplied from the remote facsimile machine
2 to transmit the NSS which is the entry command and
the entry data. The facsimile machine 1 waits for
the entry response from the remote facsimile machine
2 after it has transmitted the NSS. The NSS is in
20 the form realized by converting the entry data into
the HDLC frame format, and FIF (information field)
of the NSS is the contents of the entry data.

The response with respect to the NSS and supplied
from the remote facsimile machine 2 is categorized into
25 an affirmative response and a negative response which
respectively are MCF and RTN (training negation).
When the communication adapter 2 has received the

1 MCF, it transmits the NSS of the next command if the
next command is present. If no next command is present,
it transmits the DCN (disconnection command). If
the communication adapter 2 has received the RTN,
5 it transmits the DCN and completes the process or
transmits a next command.

The process for executing the foregoing
procedure is performed in steps from step S505 in
such a manner that the command is received in step
10 S205. Then, the transmitted contents and the received
contents are stored into the receiving buffer, that
is, the log file in steps S506 and S507. At this
time, transmission identifier "TX" is added to the
received contents and receipt identifier "RX" is added
15 to the received contents as shown in Figs. 50 and
51 before the contents are written.

The processes to be performed in steps S506
and S507 are shown in a flow chart shown in Fig. 52.

First, the log file is opened (step S901),
20 and an examination is performed that the signal is
transmitted or received (step S902). In accordance
with the result of the examination, data is written
on the log file. If the transmission is made, the
contents of the entry data file are read out (step
25 S905) and the identifier "TX" is added (step S906).
If the signal is received, that is, if a signal is
received from the facsimile machine 2, the received

```
10 log file is closed (step S903).
```

15 or not it has been allowed to enter normally.

25 the entry command in step S505 is repeated. If no

command is present, the DCN is transmitted in step

S510 and the process is completed.

1 (Reading of Log File)

The log file made by the foregoing procedure can be read out by the PC 3.

5 The facsimile machine 1 transmits the contents of the log file in accordance with the result request command (the file read command) issued from the PC 3. The result request command is a command for requesting the transmission of the log file. The command requires the file number to be instructed from 10 the PC 3. The PC 1 reads out the file number of the entry data file with the status command at the time of making the previous entry data file (in step S613 shown in Fig. 44). Since the file number of the log file is a value obtained by adding one to the file 15 number of the data file as described above, the number of the log file can be obtained by adding one to the file number of the entry data file which has been read out.

The file reading procedure is shown in Figs. 20 43A and 43B. Fig. 43A illustrates the message transmission/receipt, and Fig. 43B illustrates the format of the file read command 61.

Fig. 40 illustrates the process to be performed by the facsimile machine 1 which has received the 25 image confirmation command from the PC 3. In this process, the procedure of the file read command shown in Fig. 45 is executed while making the log file to

1 be the subject.

As show in Fig. 45, an examination is made whether or not the file number is given to the command (step S701). If the file number is present, whether or not the file having the number is examined (step S702). If the file is present, the ACK is sent to the PC (step S704). Then, the page status is transmitted to examine the response (steps S705 and S706). If the ACK response has been made, the contents of the file are transmitted while conforming to a predetermined format (steps S708 to S712).

Since the log file, which is the result of the entry, is transmitted to the PC 3 as described above, the normal completion of the remote data entry
15 can be recognized through the PC 3.

Fifth Embodiment

A fifth embodiment will now be described in which entry data allowed to enter the remote facsimile machine 2 is read out. Fig. 53 illustrates the procedure of the process to be performed by the facsimile machine 1 which has received the entry data reading command from the PC. The foregoing procedure is substantially the same as the process for setting the entry data described in the fourth embodiment except for the different between the command and the response and a slight difference in the process. Therefore, the common process to the fourth embodiment

1 is described briefly.

The PC 3 inputs the entry data items to be read from the remote facsimile machine 2 in accordance with the host program on the PC 3 (see Fig. 41) and transmits data to the facsimile machine 1 by way of the interface RS232C (see Figs. 42A to 42D and Fig. 44).

The facsimile machine 1 sequentially stores the data transmitted from the PC 3 into the exclusive buffer to write the data for each line into the entry data file. When the data transmission has been completed, the entry data file is closed.

Then, the log file is generated. Assuming that the entry data file number is 100, the log file number of the file is 101.

The communication adapter 2 calls the remote facsimile machine 2 in the public circuit network. When the circuit has been connected, the communication adapter 2 transmits the entry data in accordance with the remote entry communication procedure while converting it into the 300 bps HDLC frame format (see Figs. 8A to 8C). The remote entry communication procedure has the introduction thereof which is the T.30 initial identification phase (see Fig. 5). The remote facsimile machine which has received the data declares that it has the remote entry function in the NSF (Non-Standard Function). The communication adapter which

1 has received the declaration issues the machine type
request command, which is the command to read the
machine type, to the remote facsimile machine and
waits for the machine type declaration response. The
5 machine type request command is issued in the NSS
(Non-Standard Setting). When the NSC (Non-Standard
Function Command) of the machine type declaration
response is received, the MCF denoting the completion
of the machine type declaration is transmitted. When
10 the machine type declaration phase has been completed,
the remote entry procedure proceeds to the data reading
phase.

The foregoing operations are performed in
steps S1001 to S1004 shown in Fig. 53. The data reading
15 phase is performed in accordance with the procedure
shown in Fig. 7.

As shown in Fig. 7, the data reading phase
is performed in such a manner that the facsimile machine
1 receives the NSF, which is the data transfer request
20 command issued by the remote facsimile machine 2,
and transmits the NSS which is the reading command
to the facsimile machine 2. After the NSS has been
transmitted, the entry response from the remote facsimile
machine 2 is waited for. The NSS is obtained by
25 converting the reading data into the HDLC frame format.
The response from the remote facsimile machine 2 is
made in the form of the reading data, which is the

1 NSC. The facsimile machine 1 makes a response to
the NSC, the response being categorized into an
affirmative response and a negative response each
of which is composed of the MCF (message confirmation)
5 and the RTN (training negation). After the response
has been transmitted, the NSF which is the data transfer
command of the remote facsimile machine is waited
for. After the NSF has been received, the NSS is
transmitted if the reading data item is present. If
10 the item is not present, the DCN is transmitted, and
the process is completed.

The process for executing the foregoing procedure is performed in the step from step S1005. In step S1005, the reading command is transmitted, and the contents to be transmitted and received are stored in the receiving buffer, that is, the log file in steps S1006 and S1007. At this time, the transmission identifier "TX" is added to the contents to be transmitted as shown in Figs. 50 and 51, while the receipt identifier "RX" is added to the contents to be received. The processes to be performed in steps S506 and S507 are shown in the flow chart shown in Fig. 52.

The log file thus-made can be read on to the PC 3 by using the data reading confirmation command issued from the PC 3. Fig. 54 illustrates the process to be performed to correspond to the command and performed by the facsimile machine 1, the process

1 being substantially the same as the process which
is performed when the log file is instructed with
the file read command shown in Fig. 45.

When the entry data is read out as described
5 above, the hysteresis can be read out on to the PC
3 and the results can be recognized on the PC 3.

Sixth Embodiment

Fig. 13 illustrates the procedure of the process to be performed when the entry command has been sent from the PC 3 to the facsimile machine 1.

The PC 3 supplies data to be caused to enter the remote facsimile machine 2 by the host program on the PC 3 (see Fig. 41) and transmits the data to the facsimile machine 1 by way of the interface RS232C (see Figs. 42A to 42D and Fig. 44).

The facsimile machine 1 sequentially stores the data sent from the PC 3 into the exclusive buffer and writes the data for each line on the data file. When the data has been transferred, the data file is closed. The data file is generated on the image area on the DRAM for the image file to be generated at the time of the image transfer performed by a usual facsimile machine (see Fig. 48).

The image file is managed by means of the
25 file number and also the file number is given to the entry
data file. The transmitting buffer according to this
embodiment means the RMD transmitting buffer shown

10 The machine type declaration phase of the remote entry
is defined as the entrance of the remote entry procedure.
In this state, a high speed procedure at 9600 bps
and 4800 bps is employed to perform the communication.
The procedure of the machine type declaration phase
15 is as shown in Fig. 13.

The remote facsimile machine 2 which has received the data declares that it has the remote entry function in the NSF (Non-Standard Function Declaration). The facsimile machine 1 which has received the declaration issue, to the remote facsimile machine 2, the machine type request command which is the command to read the machine type and waits for the machine type declaration response. The machine type request command is issued in the NSS (Non-Standard Function Declaration). When the NSC (Non-Standard Function Command) of the machine type declaration response has been received, the MCF denoting the completion of the machine type

1 declaration is transmitted. When the machine type
declaration phase has been completed, training is
performed and the CFR (receipt preparation confirmation)
is transmitted. Then, the entry command and data
5 are, in the form of the HDLC format, are transmitted
similarly to the transmission of the image data. In
this case, a data capacity of 64 Kbyte can be transmit-
ted in one transmission operation. When the communica-
tion adapter 2 has received the entry command, it
10 writes the command on the log file. The foregoing
procedure is the same as that according to the first
embodiment.

The foregoing processes are performed in steps
S1201 to S1206.

15 The remote facsimile machine 2 which has
received the entry data checks transmission error
in the received data. If the transmission data is
present, the remote facsimile machine 2 transmits
the PPR (retransfer request signal) to the facsimile
20 machine 1. The facsimile machine 1 waits for the
response of the remote facsimile machine 2 to test
it (step S1208). If the PPR has been received, the
facsimile machine 1 retransfers the frame denoted
by the PPR (step S1209).

25 If the result of the check of the error in
the receive data is normal, the remote facsimile
machine 2 commences the entry operation such that

1 it transmits the RNR until the entry operation is
completed. When the entry has been completed, it
transmits the MCF. Therefore, the facsimile machine
1 is made standby until it receives the MCF while
5 transmitting the RR with respect to the received RNR
(step S1210).

When the response is received from the remote
facsimile machine 2, it is written on the log file
(step S1211). The procedure in this case is the same
10 as that according to the fourth embodiment. Then,
whether or not the received response is the MCF is
tested (step S1212). If the MCF has been received,
whether or not next data is present is examined (step
S1213). If the data is present, the next data is
15 transmitted. If the next data is not present, the
DCN is transmitted and the communication is completed
(step S1214).

The procedure from step S1206 to step S1214
is made similarly to that shown in Fig. 15. By employing
20 the procedure shown in Fig. 55, only the command
received correctly is recorded on the log while
preventing recording of the command transferred again
due to the transmission error. Therefore, the size
of the log file can be made adequately.

25 The thus-made log file can be read out from
the PC 3. That is, the facsimile machine 1 is operated
in such a manner that the communication adapter

1 transmits the contents of the log file to meet the
result request command (file read) issued from the
PC 3 by way of the interface RS232C (see Figs. 40,
43A, 43B and 45). The PC 3 side is able to know the
5 normal completion of the remote data entry due to
the foregoing response.

Seventh Embodiment

Fig. 56 illustrates the procedure of the process
to be performed by the communication adapter according
10 to the seventh embodiment. This embodiment is so
arranged that the entry command according to the sixth
embodiment is replaced by a reading command.

The PC 3 receives the reading data items onto
the remote facsimile machine 2 from a user by using
15 the host program on the PC 3 (see Fig. 41) and transmits
the data to the communication adapter 2 via the interface
RS232C (see Figs. 42A to 42D and 44).

The facsimile machine 1 sequentially stores
the data transferred from the PC 3 into the exclusive
20 buffer to write data for each line on to the entry
data file. When the data transfer has been completed,
the entry data file is closed. The entry data file
is generated on a similar image area to the image
file to be generated at the time of the usual facsimile
25 operation (see Fig. 48).

The image file is managed with the file number
and the entry data file is also given the file number

1 The transmitting buffer according to this embodiment
means the RMD transmitting buffer shown in Fig. 47
which is the region for storing reading data of the
data file generated here, that is, the entry data
5 to be transmitted to the remote facsimile machine.
By possessing the foregoing buffer, the formation
of the transmission data at the time of the retransfer
and data writing on to the log file can efficiently
be performed.

10 The facsimile machine 1 calls the facsimile
machine 2 in the public circuit network. The machine
type declaration phase of the remote entry is defined
as the entry of the remote entry procedure and the
high speed procedure of 9600 bps and 4800 bps is
15 employed to perform the communication (see Fig. 5).

The remote facsimile machine 2 which has received
the data declares that it has the remote entry function
in the NSF (Non-Standard Function Declaration). The
facsimile machine 1 which has received the declaration
20 issues, to the remote facsimile machine 2, the machine
type request command which is a command to read the
machine type and waits for the machine type declaration
response. The machine type request command is included
in the NSS (Non-Standard Function Declaration). When
25 the NSC (Non-Standard Function Command) of the machine
type declaration response is received, the MCF denoting
the completion of the machine type declaration is

The remote facsimile machine 2 which has received the reading data transmits the PPR (Retransfer Request Signal) if the transmission error is present as a result of the transmission error check. The facsimile machine 1 which has received the PPR retransfers the frame indicated by the PPR. If a normal result is obtained in the error check performed by the remote facsimile machine 2, the remote facsimile machine 2 transmits the contents of the entry data in the HDLC format. The facsimile machine 1 receives the data and performs the process of writing the received data on to the receiving buffer. If an item having no reading data response is present, the MCF is transmitted. If all reading data items are normal, the DCN is transmitted and the communication is completed.

The facsimile machine 1 stores the transmission
25 contents and the receipt signal into the receiving
buffer while communicating with the remote facsimile
machine 2. At this time, the transfer identifier

1 "TX" is added to the transmission contents and the
receipt identifier "RX" is added to the receipt signal
before they are written. When the transmission is
completed, that is, the remote data entry is completed,
5 the log file is closed (see Fig. 52).

The foregoing procedure is shown in steps
S1301 to S1313. The foregoing procedure is similar
to the procedure shown in Fig. 16.

The facsimile machine 1 transmits the contents
10 of the log file in response to the result request
command (file read) issued from the PC 3 by way of
the interface RS232C. Thus, the normal completion
of the remote data entry can be known on the PC 3
due to the foregoing response.

15 Eighth Embodiment

An eighth embodiment of the communication
system capable of recognition the communication state
of the facsimile machine 1 on the PC 3 will now be
described.

20 The PC 3 transmits the entry data, as a command,
to the facsimile machine 1 which acts as the communica-
tion adapter. The facsimile machine 1 is connected
to the PC 3 by an RS232C cable.

The remote facsimile machine 2 to which the
25 data is caused to enter is connected to the facsimile
machine 1 by a public circuit.

1 <Entry Command Procedure (Registry Command Procedure)
to be Performed by Communication Adapter>

Fig. 69 illustrates the procedure of the
operation of the facsimile machine 1 to be performed
5 in accordance with the remote data entry command
issued from the PC 3.

The entry data to be caused to enter the remote
facsimile machine 2 is supplied by the host program
(see Fig. 41) on the PC 3. The PC 3 transmits the
10 data supplied to the facsimile machine 1 by way of
the interface RS232C, the data being transmitted as
the entry command (see Figs. 42A to 42D). Then, the
process shown in Fig. 49 is commenced.

When the facsimile machine 1 receives the
15 entry command from the PC 3, it obtains a management
record of the file to be made on the image management
table in step S1901, given a file number and obtains
a memory from the DRAM so that the entry data file
is made.

20 The file number is an image file management number
which is given to correspond to the file at the time
of making the file. The entry data file is generated
in the same image area for the image file to be
generated at the time of transmitting the image (see
25 Fig. 48).

The facsimile machine 1 sequentially stores
the data supplied from the PC 3 by way of the interface

In next step S1902, the facsimile machine
1 writes "****" as the communication status at the
transmission commencement moment. The communication
status is data to be stored in a region assigned on
to a memory, such as the DRAM, which is included in
the apparatus, the communication status being reloaded
0 to correspond to the state of the communication at
the time of the completion of the communication.
Therefore, the value "****" which has been written
before the communication is commenced is employed
if the communication is being performed.

The response of the facsimile machine 2 to the foregoing transmission is categorized into an affirmative response and a negative response which 25 respective are the MCF (message confirmation) and the RTN (retraining negation). The facsimile machine

- 1 1 receives the response from the facsimile machine
2 in step S1905.

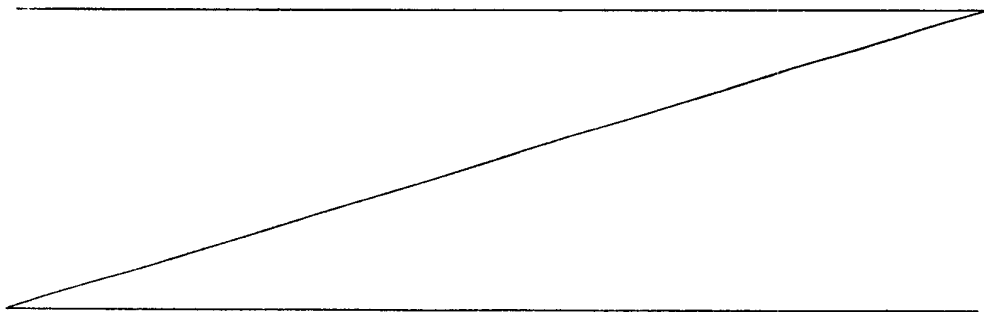
When the facsimile machine 1 receives the response, it examines the response in step S1906.

- 5 When it receives the MCF, the flow proceeds to step S1907 in which an examination is made whether or not the next command is present. If the next command is present, the NSS of the next command is transmitted and the DCN (disconnection command) is transmitted
10 if the next command is present (step S1908). If the RTN is received, the DCN is transmitted and the process is completed. As an alternative to this, the next command is transmitted.

- The procedure from step S1904 to step S1908
15 are the same as that shown in Fig. 6.

- Finally, the facsimile machine 1 rewrites the communication status to "0000" at the time of the completion of the communication (the transmission of the entry data file generated in accordance with
20 the file write command of the PC 3 to the remote facsimile machine 2) in step S1909.

25



1 <Reading of Status by PC 3>

2 The PC 3 transmits the status command to the
3 facsimile machine 1 after the PC 3 has transmitted
4 the file write command. The reading protocol to be
5 employed here is arranged as shown in Fig. 57. The
6 commands are arranged as described in the description
7 about the fourth embodiment. The status command is
8 in the form in which subject file number is instructed,
9 the file number being the number of the entry data
10 file in this embodiment. The foregoing status command
11 is continuously transmitted until the communication
12 status indicates the completion or at certain
13 intervals.

14 The facsimile machine 1 is able to respond
15 to the command issued from the PC 3 by way of the
16 RS232C even if the communication with the remote
17 facsimile machine 2 is being performed. In response
18 to the status command issued from the PC 3, the
19 facsimile machine 1 is operated as shown in the flow
20 chart shown in Fig. 59 in accordance with the
21 protocol shown in Figs. 57A to 57C.

22 As shown in Fig. 59, the facsimile machine
23 1 transmits the ACK if the response to the command
24 can be made (step S1402). If an abnormal state has
25 been realized, the NAK is transmitted (step S1403).

After the ACK has been transmitted, the
communication status is formed into the response form

1 and a command response is performed as shown in Figs.
57A and 57C (steps S1403 to S1405). The form of the
response is composed of the file number of the RMD
transmission entry data file, the command which is
5 being executed by the file or the executed command
and the communication status (see Figs. 58A to 58C).
The communication status is a value read from the
memory in which it is stored. The PC which has
received the communication status is able to know
10 whether or not the communication is being performed
by looking the communication status portion. That
is, if the value is "****", the communication is
being performed. If the value is "0000", the
communication has been completed.

15 As a result of the foregoing procedure, the
states of the communication between the communication
adapter and the remote facsimile machine can be known
through the PC to which the communication adapter is
connected.

20 Ninth Embodiment

Fig. 60 illustrates the procedure of the
entry command to be issued from the facsimile machine
1 according to this embodiment.

The entry data to be caused to enter the
25 remote facsimile machine 2 is supplied by using the
host program (see Fig. 41) on the PC 3, the entry
data being transmitted to the facsimile machine 1 by

1 way of the interface RS232C.

As shown in Fig. 60, when the facsimile machine 1 has received the entry command from the PC 3, it makes a management record of the file to be made from the command on the image management table, assigns a file number and obtains a memory from the DRAM as to generate the data file.

The file number is an image management number which is given to correspond to the file at the time of making the file. The data file is made in an image area similar to the image file to be made at the time of a usual file is operated (see Fig. 48).

The data from the PC 3 obtainable by way of the interface RS232C is sequentially stored in an exclusive buffer. When the data transfer has been completed, the data file is closed (step S1501).

Then, the facsimile machine 1 makes the communication status to be "****" at the time of the commencement of the transmission (step S1502). Since the communication status is rewritten only at the completion of the communication, it is made to be "****" if the communication is being performed.

Then, the facsimile machine 1 calls the remote facsimile machine 2 in the public circuit network. When the circuit has been established, the facsimile machine 1 converts the entry data into the form of a transmission signal and transmits it in

1 accordance with the remote entry communication
procedure (step S1504).

The response from the remote facsimile machine 2 is categorized into an affirmative response and a negative response which respective are the MCF (message confirmation) and the RTN (retraining negation).

When the facsimile machine 1 has received the MCF, it transmits the NSS of a next command if any. If no next command is present, it transmits the DCN (disconnection command). When the facsimile machine 1 has received the RTN, it transmits the DCN and the process is completed. As an alternative to this, it transmits the next command (steps S1504 to S1508).

15 If a communication error takes place during
transmission of a command to the facsimile machine 2
according to this embodiment, the facsimile machine 1
writes an error number as the communication status (step
S1509). The error number is a value which is determined
20 depending upon the phenomenon of the error and the
cause.

The PC 3 transmits the file write command, and then transmits a status command. The status command is in the form with which the file number is instructed, and the file number is the file number of the entry data file (see Figs. 57A to 57C). The foregoing command is continuously transmitted until

1 the communication status indicates the completion.

The facsimile machine 1 is able to respond
the command from the PC 3 by way of the interface
RS232C during communication with the remote facsimile
5 machine 2. When the status command is issued from
the PC 3, the facsimile machine 1 is operated as
shown in the flow chart shown in Fig. 59 in
accordance with the protocol shown in Figs. 57A to
57C.

10 As described above, the communication state
of the facsimile machine 1 or the state of the
communication completed latest from the PC 3.

Tenth Embodiment

The operator inputs the connection number which
15 is the telephone number of the remote facsimile machine by
using the host program on the PC 3. At this time,
the data is supplied in accordance with the menu
image plane exemplified in Fig. 62. When "EXECUTION"
is selected from the menu, the PC 3 transmits the
20 NSF/DIS reading command to the facsimile machine 1 by
way of the interface RS232C. The procedure is shown
in Fig. 63.

The NSF/DIS reading command is in a special
form of the file write command shown in Figs. 42A to 42D
25 arranged such that the file write data code is made
to be "NSF/DIS" and only data Q (EOP) is written on
the file.

1 <Procedure of Processing NSF/DIS Reading Command>

Fig. 61 illustrates the procedure of the process to be performed by the facsimile machine 1 which has received the NSF/DIS reading command.

5 As shown in Fig. 61, when the facsimile machine 1 has received the NSF/DIS reading command from the PC 3, it obtains, on the image management table, a management record of the file to be made in step S1610 and obtains a memory from the DRAM. The
10 image management record of the data file is made and the file number is given to it (see Fig. 48). The file number is transmitted to the PC 1 as status information by way of the interface RS232C with the status
15 command to be supplied from the PC 1. The foregoing file is called NSF/DIS hereinafter.

In next step S1602, the facsimile machine 1 calls the destined remote facsimile machine 2 in the public circuit network.

In next step S1603, the parameter of the
20 NSF/DIS command is instructed as "CD = 11" so that the attribute of the file is made to be NSF/DIS of the RMD. Further, file initialization is performed in such a manner that the page forming the present
25 file is deleted and a new page is formed to examine in step S1604 whether or not the initialization has succeeded.

The remote facsimile machine 2 (destined

1 facsimile machine) which has been called transmits
the NSF (Non-standard Function Declaration), the CSI
(Called-Side Identification) and DIS (Digital
Identification Signal) indicating the performance of
5 the called side.

The communication adapter which has received
the foregoing signals, it tests in step S1605 whether
or not the received contents are DIS. If the
contents are the DIS, the communication adapter, in
10 step S1606, writes the contents on the NSF/DIS file
which has been made previously. As an example of
this, the HDLC frame of the DIS is shown in Fig. 68.
The contents to be written on the file are the FIF
in the frame. The foregoing operations are shown in
15 Fig. 65.

As shown in Fig. 65, the NSF/DIS file is
opened (step S1701). Then, a discrimination is made
whether or not the received signal is the DIS (step
S1702). If the signal is the DIS, the frame length,
20 from which the address of the received frame, the
control, FCF and FCS fields are omitted, is
calculated (step S1704). If the DIS could not be
received, the DCN is transmitted and the
communication is completed here (step S1703).

25 Then, the RX identifier denoting the received
data is written on the NSF/DIS file (step S1705).
Then, the data of FIF is converted from BCD to ASCII

1 (step S1710). The foregoing operation is performed
for the purpose of making a display at the time of
the transmission of the NSF/DIS file to the PC 3.
The converted contents are written on the NSF/DIS
5 file (step S1711), and dis-data-len is decreased
(step S1712) until all FIF data items are written to
the file. Then, the NSF/DIS file is closed (step
S1709).

10 As a result of the foregoing procedure, the
facsimile machine 1 stores the function read from the
remote facsimile machine 2 as the file.

<Reading of NSF/DIS File from PC>

15 The PC 3 request transmission of the NSF/DIS
file to the facsimile machine 1 by way of the
interface RS232C. The foregoing request is performed
by using the foregoing file read command and by
instructing the file number of the NSF/DIS file.

20 When the file read command is issued from the
PC 3, the communication adapter transmits the
contents of the NSF/DIS file. The results are shown
in the right half portion of Fig. 62. In accordance
with the foregoing results, the entry items, entry
data or reading data items can be set into the remote
facsimile machine. Further, the facsimile function
25 of the destined machine can be recognized.

Eleventh Embodiment

In this embodiment, the description will be

1 made about the procedure in which the logs of the
remote entry data reading command are sequentially
recorded as is performed in the fifth embodiment
together with the process of the NSF/DIS file
5 according to the tenth embodiment.

Fig. 66 illustrates the procedure of the
operation to be performed by the facsimile machine 1
which performs the NSF/DIS file command and the entry
data reading command.

10 The operator inputs the connection number which
is the telephone number of the remote facsimile machine
2 by using the host program on the PC 3 (see Fig.
62). When "EXECUTION" is selected, the PC 3
transmits the NSF/DIS reading command to the
15 facsimile machine 1 by way of the interface RS232C
(see Fig. 63). The NSF/DIS reading command is in a
special form of the file write command shown in Figs. 42A
to 42D arranged such that the file write data code is
made to be "NSF/DIS" and only data Q (EOP) is written
20 on the file.

Further, the operator inputs the entry data
items to be read from the remote facsimile machine 2
in accordance with the menu by using the host program
on the PC 3 (see Fig. 67) and transmits data to the
25 communication adapter 2 by way of the interface
RS232C. The procedure of the foregoing process is
shown in Figs. 42A to 42D.

1 Fig. 66 illustrates the process to be
performed by the facsimile machine 1 from the moment
at which it receives the command sent from the PC 3
which has received the two inputs.

5 As shown in Fig. 66, when the facsimile
machine 1 has received the NSF/DIS reading command
issued from the PC 3, it opens the NSF/DIS file in
step S1801. That is, the management record of the
10 file to be made is obtained on the image management
table and obtains a memory from the DRAM. Further,
an image management record of the data file is made
while giving the file number (see Fig. 48). The file
number is transmitted as the status information to the
PC 3 by way of the interface RS232C in accordance
15 with the status command to be issued from the PC 3
(see Figs. 42A to 42D). The foregoing file will be
called "NSF/DIS" hereinafter. By instructing the
parameter of the reading command to be "CD = 11", the
attribute of the file is made to be NSF/DIS of the
20 RMD.

 When the remote data entry command is issued
from the PC 3, the entry data file is made in step
S1802, the entry data file is made and data is
written in step S1802. When the data transfer has
25 been completed, the data file is closed. The
foregoing procedure is arranged similarly to the
foregoing description.

The remote facsimile machine 2, which has been called, transmits the NSF (Non-Standard Function Declaration), the CSI (Called-Side Identification) and DIS (Digital Identification Signal) indicating the performance of the called side.

After the foregoing writing operation has
20 been completed, the procedure of the machine type
declaration phase shown in Fig. 5 is executed in step
S1808. The facsimile machine 1 issues the machine
type request command, which is the command to read
the machine type, and waits for the machine type
25 declaration response. When the machine type request
command NSS (Non-Standard Function Declaration) is
issued and the NSC (Non-Standard Function Command)

1 of the machine type declaration response has been
received, the MCF denoting the completion of the
machine type declaration is transmitted. When the
machine type declaration phase has been completed,
5 the remote entry procedure is shifted to the data
reading phase.

The facsimile machine 1 stores the contents
to be transmitted and the receipt signal into the
NSF/DIS file while communicating with the remote
10 facsimile machine 2 in steps S1809 to S1811. At this
time, the transmission identifier "TX" is added to
the contents to be transmitted and the receiving
identifier "RX" is added to the receipt signal (see
Fig. 18). The foregoing file is not a log file but
15 it is an NSF/DIS file.

In the data reading phase, the facsimile
machine 1 receives the NSF, which is the data
transfer request command, from the remote facsimile
machine 2 and transmits the NSS which is the reading
20 command. The NSS is obtained by converting the
reading data into the HDLC frame format. After the
NSS has been transmitted, the entry response from the
remote facsimile machine 2 is waited for. The
response from the remote facsimile machine 2 is the
25 reading data, that is, the NSC.

The facsimile machine 1 responds to the NSC,
the response being categorized into an affirmative

1 response and a negative response which respectively
are the MCF (Message Confirmation) and the RTN
(Retraining Negation). After the response has been
transmitted, the NSF, which is the data transfer
5 request from the remote facsimile machine 3, is
waited for. After the NSF has been received, a
discrimination is made in step S1812 whether or not
the reading item is further present. If the reading
item is present, the flow proceeds to step S1814 in
10 which the MCF is transmitted. If no reading item is
present, the DCN is transmitted and the communication
is completed in step S1813.

As a result of the foregoing procedure, the
function of the remote facsimile machine and the
15 remote entry data reading log can be stored in the
NSF/DIS file.

<Reading of NSF/DIS file>

The PC 3 request the transmission of the
NSF/DIS file via the interface RS232C (see Figs. 43A
20 and 43B). It is the file read command having the
contents which are the same as that according to the
foregoing embodiment.

That is, when the command from the PC 3 has
been received, the facsimile machine 1 transmits the
25 contents of the NSF/DIS file. As a result, the
communication function of the remote facsimile
machine 2 and the contents of the read remote entry

1 data can be known.

The present invention may be applied to a system consisting of a plurality of units or a sole apparatus. The present invention may, of course,
5 be applied to a structure in which a program is supplied to a system or an apparatus.

Therefore, the hysteresis of the data entry performed by the communication can be left. Further, the function of the destined apparatus and the state
10 of the communication can be known from the host computer to which it is connected.

Twelfth Embodiment

Fig. 70 is a block diagram which illustrates the structure of the remote facsimile machine 2.

15 Reference numeral 11 represents a network control apparatus for controlling the public circuit network, 12 represents a modem for modulating and demodulating the digital signal and the analog signal and 13 represents a CPU for controlling the facsimile
20 machine 2. Reference numeral 14 represents a ROM for storing, for example, a program to be executed by the CPU 13, and 15 represents a RAM to be used as a working area or which stores remote entry data, such as shortened telephone number list and a calling side
25 name and the like. Reference numeral 16 represents an operation panel which is operated by an operator, 17 represents a reading apparatus for reading an

1 original document, 18 represents a recording
apparatus for printing information on to recording
paper, 19 represents a telephone for performing
communication, and 20 represents a switch for
5 inhibiting/permitting the entry and reading to and
from the RMD.

The RAM 15 includes regions as shown in Fig.
71, that is, an RMD data region 41 on which a value
corresponding to the state of the RMD switch is
10 written, a write inhibited data region 42 on which a
value corresponding to the state of the write
inhibition switch is written, a service RMD data
region 43 on which the value of the service RMD
switch is written, and a service reading permission
15 data region 44 on which a value corresponding to the
state of the service permission switch is written.
Although the foregoing switches may be software
switches to be inputted as binary data, mechanical
and electrical switches provided for the RMD switch
20 are employed in this embodiment.

With the foregoing structure, the operator
executes, for example, the program included in the PC
3 to instruct and input data to be remote entry in
the remote facsimile machine or data allowed to enter
25 the remote facsimile machine 2. In accordance with
the input thus-made, the PC 3 sends supplied data and
a command such as data entry about the remote entry

1 or a command to read data to be facsimile machine 1
by way of the interface RS323C.

The facsimile machine 1 which has received
the foregoing commands, makes a remote entry file in
5 accordance with the supplied data, and transmits data
filed in the remote facsimile machine 2 in accordance
with a predetermined control procedure. The
predetermined control procedure according to this
embodiment is arranged to be a binary procedure.
10 That is, a phase is performed in which the functions
of the destined machines are changed, and then a
phase is commenced in which data to be allowed to
enter or data to be read is sent.

The transmission control procedure between
15 the facsimile machine 1 and the facsimile machine 2
in each phase is shown in Figs. 5 to 7.

In the machine type declaration phase shown
in Fig. 5, the remote facsimile machine 2 called
from the facsimile machine 1 declares the machine
20 type in accordance with the flow chart shown in Fig.
72. The flow chart shown in Fig. 72 illustrates
the procedure of the process to be performed by the
facsimile machine 2 from the declaration moment, that
is, that performed by the CPU 13.

25 In a standby state, the state of the RMD
switch 20 is observed at predetermined interval. If
the RMD switch 20 is switched on, "1" (also called

1 "ON") is written on the RMD data 41 of the RAM 15.
 If it is switched off, "0" (also called "OFF") is
 written on the same.

Fig. 72 illustrates a state from the foregoing state. Referring to Fig. 72, an examination is continued in step S201 that the call is received. If the call is received, the RMD data 41 of the memory 15 is tested in step S202.

10 If the RMD data is turned on (1), the flow proceeds to step S203 in which the bit denoting that the RMD function is possessed is made to be "0" and a machine type declaration initial identification is transmitted.

Thus, the machine type declaration initial
15 identification is sent to the facsimile machine 1.
The facsimile machine 1 discrimination whether or not
the remote facsimile machine 2 has the RMD function.

If the bit denoting that the RMD function is possessed is "1", the data entry/request phase is commenced.

If the bit denoting that the RMD function is possessed is "0", the facsimile machine 1 sends the DCN (disconnection completion signal) to the remote facsimile machine 2 to disconnect the communication.

As a result of the foregoing procedure, the remote facsimile machine 2 is able to prevent the

1 remote data entry from the center by operating the
switch as well as its original function. Therefore,
undesirable data entry can be prevented.

Another method may be available that the data
5 entry or rewriting is inhibited in place of notifying
that the facsimile machine 1 has not the remote entry
function. If writing is inhibited, the entry data
can be read. Therefore, a write inhibition switch
provided for the switch 20 is used in addition to
10 the RMD switch.

The facsimile machine 2 observes the states
of the RMD switch and the write inhibition switch at
predetermined intervals in the standby state. If the
switches are switched on, "1" is written on the RMD
15 data 41 and the write inhibition data 42 in the RAM
15. If the switches are switched off, "0" is written
on the same. The flow chart shown in Fig. 73
illustrates the process to be performed by the
facsimile machine 2 from the foregoing moment, that
20 is, the process to be performed by the CPU 13 which
controls the facsimile machine 2.

In step S2101, a call from the facsimile
machine 1 is examined. If call receipt from a
telephone circuit or the like has been detected, the
25 flow proceeds to step S2102 in which the RMD data 41
is tested. If the RMD data is turned on (1), the
flow proceeds to step S2103 in which the write

1 inhibition data 42 is tested.

If the write inhibition data is turned on (1) in step S2103, the bit of the NSF denoting that the RMD function is possessed shown in Fig. 5 is made to be "1" and the write inhibition bit is made to be "1" to send the machine type declaration initial identification in step S2104.

If the write inhibition data is turned off (0), the bit of the NSF denoting that the RMD function is possessed shown in Fig. 5 is made to be "1" and the write inhibition bit is made to be "0" to send the machine type declaration initial identification.

If the RMD data is turned off (1) in step S2102, the bit of the NSF denoting that the RMD function is possessed is made to be "0" to send the machine type declaration initial identification in step S2106.

As described above, the remote facsimile machine 2 is able to inhibit data writing in place of the arrangement that the use of the remote entry function is not allowed the center side. In this state, the center side cannot rewrite the data but is able to know the value of the entry data.

In the system according to this embodiment, an arrangement may be employed in which the notification from the center, that is, the facsimile

1 machine 1, of a fact that the remote entry function
is not possessed is not permitted for usual users at
the remote facsimile machine 2, but is limited to a
portion of service persons who maintain the
5 apparatus. Further, the usual users are inhibited
to enter or rewrite data. If writing is inhibited,
entry data can be read. Accordingly, the service RMD
switch allocated to the switch 20 is used in place of
the foregoing RMD switch. Since use of the foregoing
10 switch is inhibited for the usual user, it must be
displaced, for example, in portion of the apparatus
that cannot be usually operated.

The facsimile machine 2 looks the states of
the RMD switch and the write inhibition switch at
15 predetermined intervals. If the switches are
switched on, "1" is written on the RMD data 41 and
the write inhibition data 42 in the RAM 15. If the
switches are switched off, "0" is written on the
same. Fig. 74 is a flow chart which illustrates the
20 procedure of the operations to be performed by the
facsimile machine 2, that is, the CPU 13 which
controls the facsimile machine 2 from the foregoing
moment.

In step S2201, a call from the facsimile
25 machine 1 is examined. If a call from a telephone
circuit or the like is detected, the flow proceeds
to step S2202 in which the service RMD data 43 is

tested. If the service RMD data is turned on (1),
the flow proceeds to step S2203 in which the write
inhibition data 42 is tested.

If the write inhibition data is turned on (1) in step S2203, the bit of the NSF denoting that the RMD function is possessed shown in Fig. 5 is made to be "1" and the write inhibition bit is made to be "1" to send the machine type declaration initial identification in step S2204.

10 If the write inhibition data is turned off
 (0), the bit of the NSF denoting that the RMD
 function is possessed shown in Fig. 5 is made to be
 "1" and the write inhibition bit is made to be "0" to
 send the machine type declaration initial
15 identification.

If the service RMD data is turned off (1) in step S2202, the bit of the NSF denoting that the RMD function is possessed is made to be "0" to send the machine type declaration initial identification in step S2206.

As described above, the remote facsimile machine 2 is able to inhibit data writing in place of the arrangement that the use of the remote entry function is not allowed the center side. In this state, the center side cannot rewrite the data but is able to know the value of the entry data.

The fact whether or not the remote entry

1 function is possessed is not determined by the user
of the remote facsimile machine 2. It is determined
at the time of, for example, installing the remote
facsimile machine 2 while inhibiting the latter
5 change.

As the RMD switch, a service RMD switch which
cannot be used for a usual user and a switch for the
usual user are disposed, and the fact whether or not
the RMD entry function is possessed is determined by
10 the AND.

The system according to this embodiment may
be arranged in such a manner that a service reading
permission switch which cannot be operated by a usual
user is used in addition to the RMD switch and the
15 write inhibition switch. Since the service reading
permission switch cannot be used for a usual user,
it must be disposed, for example, in the apparatus
so as not to be operated usually. Fig. 75 is a flow
chart which illustrates the process to be performed
20 by the CPU 13 at the time of transmitting the machine
type declaration initial identification.

In a standby state, the states of the RMD
switch, the write inhibition switch and the service
reading permission switch are looked at predetermined
25 intervals. If the switches are switched on, "1" is
written on the RMD data 41, the write inhibition data

1.

5

15

20

25

1 If a discrimination is made in step S2302
that the RMD data is turned off (0), the bit of the
NSF shown in Fig. 5 and denoting the RMD function
is possessed is made to be "0" to send the machine
5 type declaration initial identification in step S607.

As described above, the remote facsimile
machine 2 sends the machine type declaration initial
setting to the facsimile machine 1 in accordance with
setting of the switch. The facsimile machine 1,
10 which has received the setting, makes a reference to
the RMD function bit and that to the write inhibition
bit. In accordance with the setting, the flow
proceeds to the next phase so that data entry or data
reading is performed. As a result, the remote
15 facsimile machine is able to inhibit the usual user
to write data by the remote data entry. Therefore,
the entry data can be protected.

Although the RMD switch is made of metal in
this embodiment, the RMD switch may be a software
20 switch by means of a program or a operator's console
input. In this case, data of the RMD switch is
written on the data regions 41 to 44 for reading the
value of each switch whenever the data of the RMD
switch is caused to enter.

25 Thirteenth Embodiment

The illustrated PC 3 is called a RMD personal
computer which edits and manages entry data to the

1 facsimile machine 2 such as the input, edition and
save of the remote data and which performs data
communication with the center facsimile machine 1.
The remote entry system is formed by the RMD personal
5 computer in such a manner that the system comprises
a host program (called RMDHOST.EXE) 213, machine type
and image plane data bases (DB) 211 and 212, a file
214 such as a reservation file, and a program (RSHND)
215 for establishing the connection with peripheral
10 units, such as a CRT and a printer and the like, and
the communication adapter 2 by means of the interface
RS232C.

The host program 213 is executed to support:

1. Data input by an operator;
- 15 2. Data transmission and receipt to and from
the center facsimile machine;
3. Display on a CRT (the menu image plane is
formed by the image plane DB);
4. Printer output;
- 20 5. Reservation and reading of entry data
(access to the machine type data base
211 is made); and
6. Edition of entry data

In this system, a plurality of the remote
25 facsimile machines 2 are disposed each having
peculiar data input format and data form. Therefore,
the remote entry system must be supported with

1 respect to the type of the facsimile machine which
is expected to be developed in the future by managing
the input form and the data form of the facsimile
machine of the system by the data base. In
5 accordance with information obtainable from the
data base, the entry operation and entry data are
checked to form a remote entry system enabling the
machine type of the facsimile machine to be
discharged.

10 The data base is categorized by an image
plane data base 212 for managing the image plane
structure that does not depend upon the machine type
and a machine type data base 211 that manages the
peculiar data for each machine type. The structure
15 of the machine type data base is shown in Figs. 77 to
79 and that of the image plane data base is shown in
Fig. 80.

 The machine type data base (hereinafter
called a "DB") 211 is categorized to a machine type
20 DB 2111 and a user DB 2112 as shown in Fig. 77. The
machine type DB 2111 has data for causing the user DB
2112 to input data. The user DB 2112 is composed of
a plurality of tables each of which stores
entry/reading data of the actual facsimile machines,
25 the user DB 2112 being used as a temporary buffer.

 This system has a function for setting the
"input level" at the time of the data entry and

1 adjusting the entry items in accordance with the
input level. Therefore, data is set into the machine
type DB to correspond to each "input level" at the
time of entering/changing data. The contents of
5 the machine type DB are as shown in Fig. 78 such
that the menu image plane making data, input
parameters and messages are set. The user DB is,
as shown in Fig. 79, composed of tables for storing
data about each entry item.

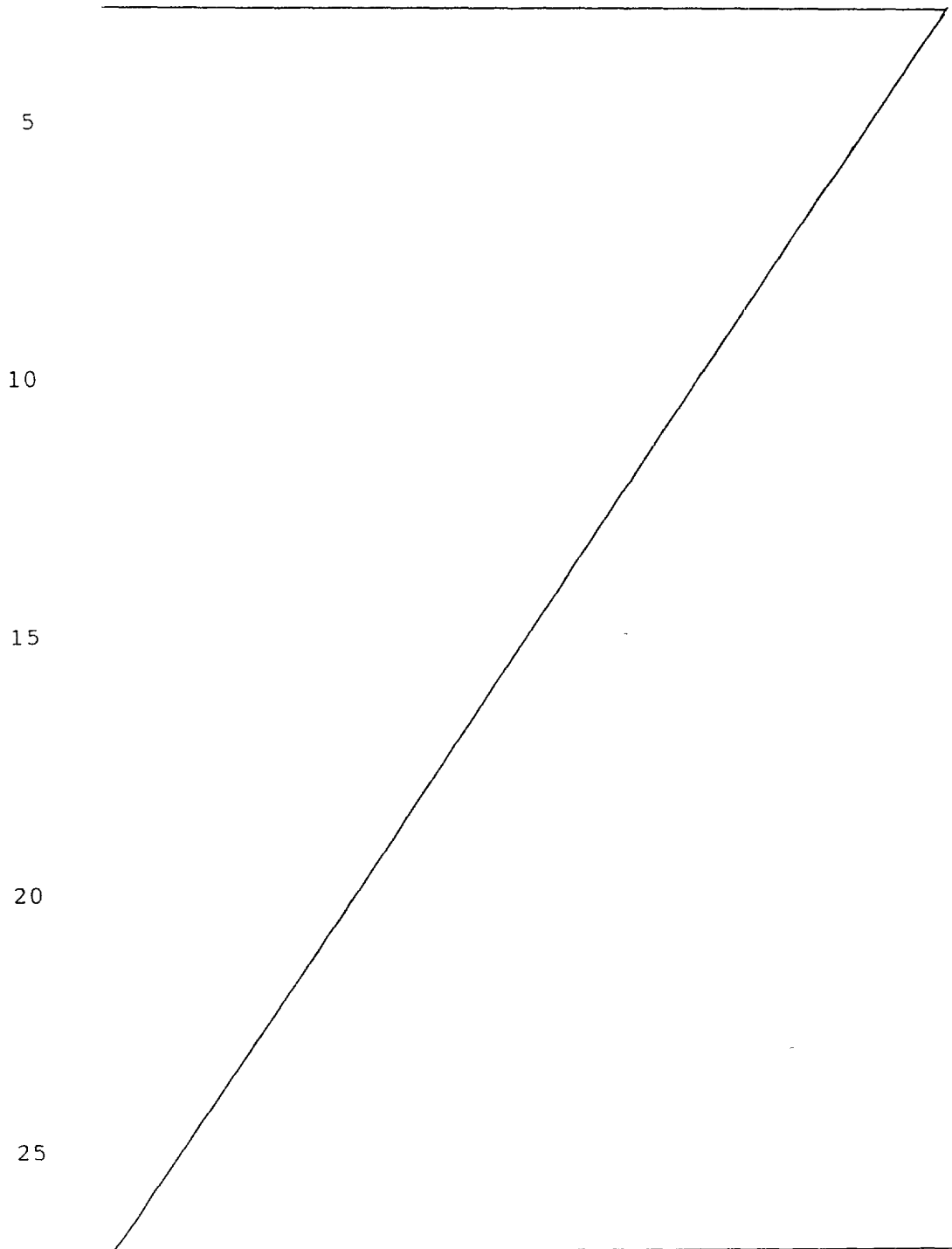
10 The image plane DB, as shown in Figs. 8A to 8C
manages the structure of the image plane menu
regardless of the machine type, the input parameters,
and the message outputs.

<Remote Data Entry (Remote Data Registry)>

15 In order to execute the remote entry, the
PC 3 commences the host program (RDMHOST.EXE). As
a result, the menu image plane is displayed in
accordance with the procedure shown in Fig. 81.

20 When the host program is commenced, a remote
entry or remote maintenance mode selection (see Fig.
82) image plane is first displayed in step S2401.
Referring to Fig. 82, a title line 181 is displayed
at the leading portion of the menu image plane without
exception. When the remote entry is selected from the
25 foregoing image plane by the operator, the flow proceeds
to step S2403 in which the entry level selection menu
for limiting the entry is displayed. The menu image

1 plane is formed as shown in Fig. 83 such that the operator selects any one of levels 1, 2 and 3.



1 The entry level is categorized into the following
three levels:

Level 1: General entry

 user data (polling ID excluded), name of
5 calling side, one touch/shortened dial

Level 2: General entry + additional entry

 user data (polling ID excluded), name of
 calling side, one touch/shortened dial, group
 dial, F-network dial, mail post, confidence
10 box, relay group and user software SW

Level 3: General entry + additional entry + service data
entry

 user data, name of calling side, one touch/
 shortened dial, group dial, F-network dial,
15 mail post, confidence box, relay group and
 user software SW

 Although the entry level is limited in item units
in this embodiment, the polling ID of the user data can
be caused to enter from the level 3. Further, entry of
20 the detailed parameter, such as the transmission rate
of the one touch/shortened dial and the overseas communi-
cation mode can be caused to enter from the level 2.

 When the entry level is selected, the flow
proceeds to step S2404 in which the command menu image
25 plane (see Figs. 84 and 85) for the remote entry is
displayed. Since the machine type and name of the
remote facsimile machine cannot be known immediate after

1 the host program has been commenced, only three items,
that is, the novel entry, the data receipt and the data
reading can be selected from the command menu to be
displayed at the foregoing moment as shown in Fig. 84.
5 By selecting the machine type and the name of the
facsimile machine at the time of the novel entry or the
like, an image plane shown in Fig. 85 is displayed.

When the change entry is selected from the command menu during the display of the menu in step S2404, the flow proceeds to step S2405 in which the entry menu image planes shown in Figs. 86, 87 and 88 displayed to correspond to the entry levels. Information for realizing the foregoing display is present in menu image plane making information (see Fig. 78) in the machine type DB 2111. Also information for shifting the entry menu to the entry process of each item or the command menu is also stored in the same portion. In step S2412, a process to be performed after any one of steps S2405 to S2411 branched in accordance with the result of the selection made in step S2404 has been performed. If the flow proceeds to step S2413, a process loop is formed in steps S2405 to step S2412. In this case, a process is selected from steps S2405 to S2411 in accordance with the command made in the immediately before step S2404.

When the entry of the one touch/shortened dial entry is selected from the entry menu by the operator,

1 an entry menu image plane as shown in Fig. 89 or Fig.
90 is displayed in step 2413 and the input of entry
data is waited for. The entry items are different
among the levels 1, 2 and 3. Fig. 29 illustrates the
5 menu image plane for the level 1, and Fig. 90 illustrates
that for the level 2. Information for making the
entry image plane is stored in the machine type DB
(see Fig. 78). When the input has been completed, the
menu image plane is again displayed to cause the input
10 to be performed.

The process immediately after step S2404 to
step S2413 are repeated until the operator completes
the input of the needed entry data. When the entry
operation has been completed by the operator, the flow
15 returns to step S2404 in which the command selection
menu image plane is displayed to wait for the input.
The operator is able to select data printing if
necessary during the repetition of the data input
operations. In this case, data is printed out in step
20 S2414.

If data transmission is selected from the
command selection image plane shown in Fig. 85 in a
state where the command menu is restored, entry data
is sent to the facsimile machine 1 via the interface
25 RS232C. The procedure of the communication to be
performed between the facsimile machine 1 and the
facsimile machine 2 is the same as that according to

1 the first embodiment. Thus, the remote entry operation
is completed. The entry data is transmitted while being
formed into the command and data of each entry item.
An example of the foregoing structure is shown in Fig.

5 91. Each command has an entry level set thereto which
corresponds to the entry level caused to enter the
data base. As shown in Fig. 91, command of the one
touch/shortened dial number is "DI", and data "01" input
to the command is continued to be formed into data
10 "DT01" at the time of the transmission.

As described above, the remote entry system
according to this embodiment enables the entry level
to be selected to correspond to information which is
intended for the operator who performs the data entry
15 operation to enter. As a result, the data entry
operation can be performed while limiting the same.
As a result, an accident that data which must be
maintained is erroneously rewritten can be prevented.

<Remote Data Reading>

20 Further, the apparatus according to this embodi-
ment is able to limit the subject data at the time of
reading data from the remote facsimile machine 2
depending upon the level. Also the foregoing process
is realized by the PC 3 to execute the host program
25 213. The foregoing fact will be described with refer-
ence to Fig. 81. The process from step S2401 to S2404
is the same as that of the data entry operation. The

1 description will be made from the moment at which the
data receipt is selected from the command menu in step
S2404.

When the data receipt is selected from the
5 menu shown in Fig. 84 or Fig. 85, the flow proceeds to
step S2410. When the machine type is instructed and the
connection number is supplied, a reading command
corresponding to the entry level is sent to the center
facsimile machine 1. An example of the command is
10 shown in Fig. 93. The command shown in Fig. 93 is sent
in accordance with the entry level. If the level of
each command is lower than the entry level, the reading
command is sent.

When the command is sent from the PC 3, communi-
15 cation is made with the remote facsimile machine 2 by
way of the center facsimile machine 1 and the entry
data is read, the PC 3 receives the reading data
accumulated in the center facsimile machine 1, the PC
3 accumulating the data in the machine type data base.

20 As described above, the reading data can be
limited depending upon the level at the time of reading
the remote data. As a result, excessive data reading
from the facsimile machine 2 by the operator of the
PC 3 can be prevented.

25 A modification of the thirteenth embodiment
will now be described.

1. The host program (RMDHOST.EXE) shown in Fig. 76

- 1 is commenced on the PC 3 and proceeds to an entry level selection.
2. Each entry level is inputted while displaying an image plane will which the input of a pass word is
5 urged at the time of the level input.
3. If the supplied pass work is different from the previously set pass word, proceeding is inhibited.
4. If the pass word is correct, proceeding to the next process is permitted.
- 10 5. The process after the shift to the next process is the same as that according to the thirteenth embodiment.

The foregoing process is arranged as shown in Fig. 95. As shown in Fig. 95, the process from step
15 S2401 to S2414 given the same step numbers are the same as those of the structure shown in Fig. 81. Steps S2501 and S2502 placed between step S2403 and step S2404 are peculiar processes in this modification and correspond to the foregoing operation 2 (step S2501) and the
20 operations 4 (step S2502).

As a result, the selection of the entry level is performed with the pass word at the time of executing the remote entry by the operator. Therefore, an erroneous level input and an intended erroneous
25 setting of items by an operator can be prevented.

Fourteenth Embodiment

An object of this embodiment is to reduce

1 maintenance cost by grasping the state of use of the
facsimile machine by obtaining information of the
remote facsimile machine by making use of the remote
data entry function.

5 The RAM 15 is allocated with counter regions
321 to 324 for storing the number of A4 size sheets
and B4 size sheets transmitted and received and another
counter region 325 for storing the number of the trans-
mission operations. The foregoing counters are
10 collectively called P.G.P counters.

The remote entry system according to this
embodiment comprises the procedure of the remote entry
between the center facsimile machine 1 and the remote
facsimile machine 2 arranged as shown in Figs. 5 to 7.

15 The operation of the remote facsimile machine 2
according to this embodiment will now be described with
reference to a flow chart shown in Fig. 98. The process
shown in Fig. 98 is realized by causing the CPU 13 to
execute the program stored in the ROM 14. The remote
20 facsimile machine 2 is able to read/record both A4
size and B4 size.

<Counting of Number of Sheets>

When the usual image transmission/receiving
operations are performed by the remote facsimile
25 machine 2, the number of sheet are recorded in a
transmission sheet counter/received sheet counter for
storing the sum of the transmitted/received number of

1 sheets stored in the memory 15.

In the transmitted sheet counter, the number of sheets depending upon the size is recorded which have been transmitted after a process of transmitting an
5 image for one page has been completed. That is, the count of an A4 transmission counter 321 is increased when an A4 sheet is transmitted, while that of a B4 transmission counter 322 is increased when a B4 sheet is transmitted.

10 In the received sheet counter, the number of sheets depending upon the size is recorded after a recording process for one page has been completed. That is, the counter of an A4 received sheet counter 323 is increased at the time of receiving the A4 sheet,
15 while that of a B4 received sheet counter is increased at the time of receiving the B4 sheet. Further, the count of a transmission number counter 325 is increased. The values of the foregoing counters are maintained even if the power source is turned off.

20 <Remote Reading of Counter>

The counter group having count data is read on to the PC 3 by means of communication by the following process.

In order to read the P.G.P counters (321 to
25 325) from a remote position, a program for reading the counters is commenced on the PC 3. Fig. 47 illustrates an image plane displayed on the PC 3 due to the

1 operation of the program thus-commenced. The operator
inputs needed items in accordance with the displayed
menu image plane.

When the input has been completed, the PC 3
5 makes a message to be transmitted to the center
facsimile machine 1 and transmits it.

When the operator has inputted the connection
number, selected the execution of reading of the P.G.P
counter and depressed the return key, the message
10 notifying them is sent to the center facsimile machine
1.

The side (the center facsimile machine 1) for
executing the remote reading receives the message to
commence the communication with the remote facsimile
15 machine 2 in accordance with the control procedure
shown in Figs. 5 to 7.

First, the facsimile machine 2 connected to
the public circuit network is called. When the
circuit is connected, the machine type declaration
20 phase (see Fig. 5) of the remote entry process is
commenced. Fig. 98 is a flow chart which illustrates
the process to be performed from a moment at which the
remote facsimile machine 2 is called.

The remote facsimile machine 2 examines the
25 call from the center facsimile machine 1 in step
S2601. If the call has been made, the flow proceeds
to step S2602.

In next step S2603, the remote facsimile machine 2 declares that it has the remote entry function in the NSF (Standard Function Declaration) shown in Fig. 5 and transmits the machine type declaration initial identification to the center facsimile machine 1.

15 The remote facsimile machine 2 tests the
received NSS signal in step S2604. If the PD command
has been received, the data reading phase is commenced
in which the data of the P.G.P counter is transmitted
by mean of the NSC (Non-Standard Function Declaration)
20 in step S2607.

When reading of the counter has been completed as described above, the center facsimile machine 1 receives the P.G.P counter data and then sends the DCN (disconnection command) in accordance with the data reading phase shown in Fig. 7 to open the circuit (step S2610). As a result, the data about the P.G.P. counter is displayed on the PC.

1 <Resetting of Remote Counter>

2 The P.G.P counter (321 to 325) of the facsimile
3 machine can be reset from a remote position. By
4 starting the program on the PC 3, the operator inputs
5 the connection number by the foregoing program to select
6 and instruct the initialization of the P.G.P. data.
7 The foregoing process is performed in accordance with
8 the menu shown in Fig. 97 similarly to the reading
9 operation. When the return key is depressed on the
10 PC 3, the remote facsimile machine 2 connected to the
11 public circuit network is called from the center
12 facsimile machine 1. The process of the remote
13 facsimile machine which has been called as described
14 above is shown in Fig. 98.

15 The process from step S2601 to S2603 is the
16 same as that of the reading operation, and then the
17 flow proceeds to the data entry phase.

18 The center facsimile machine 1 receives the
19 NSF in step S2603, and then transmits the P.G.P
20 counter reset command (MP) by the NSS (Non-Standard
21 Function Declaration) which is the RMD data entry
22 command.

23 The remote facsimile machine 2 examines the
24 received NSS in steps S2604 to S2605. If the NSS is
25 the P.G.P. reset command, the flow proceeds to step
26 S2608 in which the MCF is sent and all data items
27 of the P.G.P. counter (321 to 325) are reset.

1 The center facsimile machine 1 receives the
MCF, and then sends the DCN (disconnection command) in
accordance with the procedure shown in Fig. 6 to open
the circuit.

5 <Remote Setting of Counter>

 The P.G.P. counter (321 to 325) of the facsimile
machine can be set to a desired value from a remote
position. When the program is started on the PC 3,
and the operator inputs the connection number in accord-
10 ance with the program to execute, select and instruct the
initialization of the P.G.P. data. The foregoing
operation is performed in accordance with the menu
shown in Fig. 97 similarly to the reading operation.
When the return key is depressed on the PC 3, the remote
15 facsimile machine connected to the public circuit
network is called from the center facsimile machine 1.
The process of the remote facsimile machine which has
been called is shown in Fig. 98.

 The process from step S2601 to S2603 is the
20 same as that of the reading and resetting operations,
and then the data entry phase is commenced.

 The center facsimile machine 1 receives the
NSF in step S2603, and then sends the P.G.P. counter
data set command (MP) by the NSS (Non-Standard Function
25 Declaration) which is the RMD data entry command. At
this time, the value to be set is, of course, trans-
mitted.

1 The remote facsimile machine 2 examines the
received NSS in steps S2604 to S2606. If the NSS is
the P.G.P. counter data set command, the flow proceeds
to step S2609 in which the MCF is sent and the data
5 received together with the NSS is set to the P.G.P.
counter (321 to 325).

 The center facsimile machine 1 receives the
MCF, and then sends the DCN (disconnection command) in
accordance with the procedure shown in Fig. 6 to open
10 the circuit.

 As described above, the remote data entry
procedure can be used to read and write the maintenance
data such as the state of use of the facsimile machine
by means of the communication. Therefore, the labor
15 of inspecting the apparatus can be saved, resulting in
cost reduction. Although this embodiment use the
received and transmitted sheet counter as the subject
data, the subject data is not limited to this.

 The present invention may be applied to a
20 system composed of a plurality of units or a sole
apparatus. The present invention can also be applied
to a case where a program is supplied to a system or
an apparatus.

 As described above, undesirable data entry in
25 a remote facsimile machine from the center can be
prevented.

 Further, the entry data and data reading can

00000-30349300

^{13}C NMR spectra of the copolymers were recorded in CDCl_3 at 125 MHz. The chemical shifts were measured relative to TMS. The assignments of the peaks were made by comparing the chemical shifts with those of the monomers and the copolymers. The assignments of the peaks were made by comparing the chemical shifts with those of the monomers and the copolymers.

Fifteenth Embodiment

5 Fig. 99 is a block diagram which illustrates
the data processing structure of the PC 3 and the
facsimile machine 1.

Referring to Fig. 99, symbols KB represents a keyboard which is used in such a manner that, if a data processing mode for the facsimile machine 1 is set, a conversion code obtained by converting the supplied key code into a key code for the facsimile machine 1 in accordance with a code conversion table TAB 1 is caused to enter the data base DB (formed by, for example, a hard disk). When the transmission to the facsimile machine 1 is enabled, the conversion code data is read from the data base DB to transmit it to the facsimile machine 1. When data reading from the facsimile machine 1 is instructed, a facsimile key code array inputted by the keys of the operation panel on the facsimile machine 1 is received from an entry data management portion (formed by, for example, a RAM, which is made backup) (omitted from illustration) to enter the data base DB. Symbols CRT represents a display apparatus formed to display characters or images in accordance with the key code data of the facsimile machine entered the data base DB or the key

Symbols TAB 2 represents a reverse conversion
5 table for converting the facsimile key code array output,
the reverse conversion table TAB 2 acting to convert
the foregoing facsimile key code array into the PC key
code array on the PC 3 to output the reversely converted
key code array to the display CRT. As a result, the key
10 code array is displayed while preventing character
deformation.

A reverse conversion table TAB 3 for converting the facsimile key code array output converts the foregoing facsimile key code array into the PC key code array on the personal computer PC to transmit the reversely-converted key code array to the printer PRT. As a result, characters and the like can be printed while preventing character deformation. The respective tables TAB 1 to TAB 3 are stored in the data base DB as to be read on to a working memory (omitted from illustration) so that the data input/output process of the facsimile machine 1 is controlled by a CPU (omitted from illustration) in accordance with the procedure of a flow chart to be described later. The respective tables TAB 1 to TAB 3 are arranged to meet the specifications of the facsimile machine 1. If a different facsimile machine that can be connected is present, it is

1 remote facsimile machines 2 to 2". The received
entrance character code data of the facsimile machine
1 or a plurality of remote facsimile machines 2 to 2"
is sequentially converted into the exclusive character
5 code in the facsimile machine 1 or a plurality of remote
facsimile machines 2 to 2" while referring to the first
conversion table (table TAB 1). The converted
exclusive character code array is temporarily stored
in the external apparatus (the data base DB), and it is
10 reversely converted into the entry character code data
array in accordance with the display or the print
instruction of the stored exclusive character code
array while referring to the second conversion table
(the tables TAB 2 and TAB 3). The converted entry
15 character code data array is read to be displayed or
printed. Therefore, the character code exclusively
used for the facsimile machine entered the facsimile
machine 1 or the character code including the character
code exclusively used for the facsimile machine remote
20 entered from an external apparatus to the facsimile
machines 2 to 2" can be read from the external apparatus
as to be displayed or printed as the entry characters.

Fig. 100 illustrates an example of the con-
version data file of each of the tables TAB 1 to TAB 3
25 shown in Fig. 99.

As shown in Fig. 10, the character code con-
version table is a binary file. The first 256 bytes

1 of the character code conversion table file correspond
to the conversion table TAB 1. The next 256 bytes
correspond to the conversion table TAB 2 serving as the
reverse conversion table for display, and the ensuing
5 256 bytes correspond to the conversion table TAB 3
serving as a printing reverse conversion table. Thus,
input character codes from "00H" to "99H" (256
characters) are converted. The first byte of each
table indicates data after the input code "00H" has
10 been converted, followed by "01H", "02H", "03H". Thus,
a table of 256 bytes is formed.

With reference to a flow chart shown in Fig. 101,
the character data input/output operation of the
facsimile machine according to the present invention
15 will now be described.

Fig. 101 is a flow chart which illustrates an
example of the input/output operation of the facsimile
machine.

First, a discrimination is made whether the
20 input/output processing mode supplied through the
keyboard KB is the remote entry or the remote main-
tenance (S2701). If it is the remote maintenance mode,
the flow proceeds to step S2702 in which a remote
maintenance menu (omitted from illustration) is dis-
25 played on the display CRT.

If a discrimination is made in step S2701 that
the remote entry (in this embodiment, the remote entry

1 mode is performed by option setting so that CRSHOST
(name of the starting program)/T = DUCH. TBL (name of
the conversion table file) are supplied) is performed,
any one of the entry levels 1, 2 and 3 is selected by
5 inputting any one of 1 to 3 from the keyboard KB
(S2703). Then, an edition command menu is displayed
on the display CRT to select a desired command (change
entry, novel entry, data transmission, data receipt,
data reservation, data reading and data printing) from
10 the edition commands (S2704). Then, the selected
edition command is analyzed to execute any one of the
change entry, novel entry, data transmission, data
receipt, data reservation, data reading and data
printing (S2705 to S2711).

15 Then, a menu corresponding to the selected
command is displayed on the display CRT (S2712).

If the novel entry or the change entry is
selected in steps S2705 and 2706, the flow proceeds to
step S2713 in which a data entry process shown in Fig.
20 102 is executed as described later (S2714). If the
data printer is selected in step S2711, the data
printing process shown in Fig. 103 is executed as
described later (S2714). If reading of entry data is
selected in step S2710, the entry data display process
25 shown in Fig. 104 is executed as described later
(S2715). If the command completion is selected
(S2716), the process is completed.

1 Fig. 102 is a flow chart which illustrates the
data entry process. S2801 to S2804 are respective
steps.

 First, key code data for one character is
5 received from the keyboard KB (S2801). Then, the
received key code data is converted into a character
code for the facsimile machine 1 while referring to
the conversion table TAB 1 so that the character code
is received (S2802). Then, a discrimination is made
10 whether or not the supplied character is the code
(for example, CR key "0Ah") denoting the final data
character (S2803). If a negative discrimination is
made, the flow returns to step S2801. If an affirmative
discrimination is made, the conversion key code array
15 data for the facsimile machine FAX 1 which has been
supplied and converted is caused to enter the data base
DB (S2804). Thus, the process is completed.

 Fig. 103 is a flow chart which illustrates the
entry data printing operation shown in Fig. 101. S2901
20 to S2904 are respective steps.

 First, conversion key code array data for the
facsimile machine 1 entered the data base DB for one
character is received (S2901). While referring to the
reverse conversion table TAB 3, the received data is
25 converted into a key code array corresponding to the
character code for the PC 3 as to be received (S2902).
Then, a discrimination is made whether or not the

1 supplied character is the code (for example, CR key
"0Ah") denoting the final data character (S2903). If a
negative discrimination is made, the flow returns to
step S2901. If an affirmative discrimination is made,
5 the reversely-converted key code array is transferred
to the printer PRT (S2904) so that the entry data is
printed and thus the process is completed.

Fig. 104 is a flow chart which illustrates the
entry data display process. S3001 to S3004 are re-
10 spective steps.

First, the conversion key code array data for
the facsimile machine 1 entered on data base DB for one
character is received (S3001). While referring to the
reverse conversion table TAB 2, the received data is
15 converted into a key code array corresponding to the
character code for the PC 3 as to receive it (S3002).
Then, a discrimination is made whether or not the
supplied character is the code (for example, CR key
"0Ah") denoting the final data character (S3003). If
20 a negative discrimination is made, the flow returns to
step S3001. If an affirmative discrimination is made,
the reversely-converted key code array is transferred
to the display CRT (S3004) so that the entry data is
displayed and thus the process is completed.

25 The foregoing embodiment has been described
about the case where the key code array which can be
converted by the conversion table is a usual key code

1 (alphabets and digits). However, if a facsimile machine
is able to handle Greek characters and the PC 3 has not
the character code to handle the Greek characters, a
character type conversion table is provided for
5 converting the Greek characters and the alphabets.
Thus, the present invention can be adapted to the
foregoing case.

If a character type conversion table adaptable
to the destined place is provided in the case of
10 exporting the facsimile machine, a similar adaptation
can be realized.

Although the foregoing embodiment has been
described about the character code conversion process
(the entry process of character data with respect to the
15 FAX 1 and a process of reading entry data from the same)
between the PC 3 and the facsimile machine 1, the present
invention may be adapted to an inter-remote character
code conversion process about the facsimile machines
2 to 2" serving as the remote terminal apparatuses.
20 Then, the operation of a sixteenth embodiment will now
be described with reference to Figs. 5 to 7 and Figs.
105 to 108.

Sixteenth Embodiment

Figs. 105 and 106 are flow charts which
25 illustrate an example of a machine type declaration
phase procedure adapted to the character data processing
method. S3101 to S3116 are respective steps. The

1 machine type declaration phase corresponds to that
shown in Fig. 5.

First, the machine type of the remote facsimile machine and whether or not the remote entry function is possessed are examined by making a discrimination whether or not a command issued from the facsimile machine after the circuit has been connected is the data transfer request command NSF (S3101). If a negative discrimination is made, the flow proceeds to step S3102 in which the disconnection command DCN for disconnecting the circuit is issued and the process is completed.

If an affirmative discrimination is made in step S3101, a discrimination is made whether or not the RMD bit (the bit denoting whether or not adapted to the non-standard function) in the data transfer request command NSF is turned on (S3103). If a negative discrimination is made, the flow returns to step S3102 and the process is completed.

20 If an affirmative discrimination is made in
step S3103, the command SCI issued from the facsimile
machine 2 is stored. Then, a variety of parameters
are set in accordance with the command DIS (S3104).
Then, the command NSS/TSI/DCS is sent from the PC 3 to
25 the connected facsimile machine 2. A discrimination is
made whether or not the response to the foregoing
command has been received (S3106). If a negative

1 discrimination is made, a discrimination is made
whether or not the command issue is the third issue
(S3107). If an affirmative discrimination is made,
the flow returns to step S3105 in which the command
5 NSS/TSI/DCS is again sent from the PC 3 to the connected
facsimile machine 2. If a negative discrimination is
made, the disconnection command DCN is sent (S3108)
and the process is completed.

If an affirmative discrimination is made in step
10 S3106, a discrimination is made whether or not the
command NSC (the response command to the non-standard
function setting command NSS) has been received (S3109).
If a negative discrimination is made, the flow proceeds
to step S3110 in which the disconnection command DCN is
15 sent and the process is completed.

If an affirmative discrimination is made in
step S3109, a discrimination is made whether or not the
fourth octet of the command NSC is "11001xxx" (S3111).
If a negative discrimination is made, the flow proceeds
20 to step S3110 in which the disconnection command DCN is
sent and the process is completed. If an affirmative
discrimination is made, data about the machine name,
the destination and the ROM version and the like
included in the data field of the command NSC is stored
25 in the facsimile machine 1 (S3112). Then, the command
MCF denoting the affirmative response is sent from the
PC 3 to the facsimile machine 2 (S3113). Further, a

1 discrimination is made whether or not the command NSF
has been sent from the facsimile machine 2 (S3114). If
an affirmative discrimination is made, the flow is
shifted to the data transfer phase process shown in
5 Figs. 107A and 107B. If a negative discrimination is
made, a discrimination is made whether or not a pre-
determined time T2 has passed (S3115). If a negative
discrimination is made, the flow returns to step S3114.
If an affirmative discrimination is made, the discon-
10 nection command DCN is sent (S3116) and the process is
completed.

Figs. 107A and 107B are flow charts which
illustrate an example of the procedure of the data
transfer phase in the character data processing method.
15 S3201 to S3213 are respective steps. The data transfer
phase corresponds to that shown in Fig. 6.

First, the machine type and whether or not the
remote entry function is possessed are examined by
making a discrimination whether or not the command sent
20 from the facsimile machine 2 after the circuit has been
connected is the data transfer request command NSF
(S3201). If a negative discrimination is made, the
flow proceeds to step S3204 in which the disconnection
command DCN for disconnecting the circuit is sent and
25 the process is completed.

If an affirmative discrimination is made in
step S3201, a discrimination is made whether or not the

1 RMD bit (the bit denoting whether or not adaptation to
the non-standard function is realized) in the data
transfer request command NSF is turned on (S3202). If
a negative discrimination is made, the flow proceeds to
5 step S3204 in which the disconnection command DCN for
disconnecting the circuit is sent and the process is
completed.

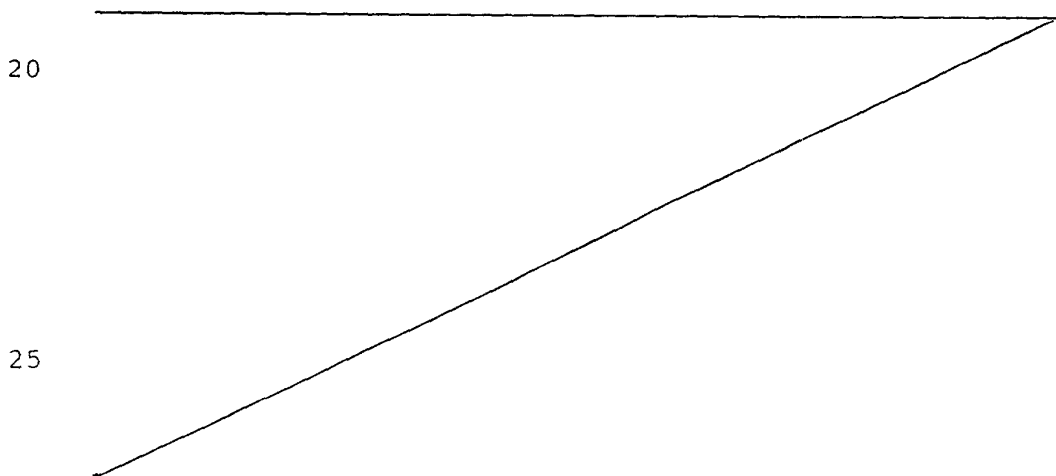
If an affirmative discrimination is made in step S3202, a discrimination is made whether or not the transmission data to the next command NSS is present. If a negative discrimination is made, the flow proceeds to step S3204 in which the disconnection command DCN for disconnecting the circuit is sent and the process is completed. If an affirmative discrimination is made, data received from the command file in units of, for example, 100 bytes, by the command NSS is sent from the PC 3 to the facsimile machine 1 (S3205). Then, a discrimination is made whether or not a response to the foregoing command has been received (S3206). If a negative discrimination is made, a discrimination is made whether or not the number of issues of the command is, for example, the third time (S3207). If a negative discrimination is made, the flow returns to step S3205. If an affirmative discrimination is made, the disconnection command DCN for disconnecting the circuit is sent (S3208) and the process is completed.

It should be noted that the foregoing "data" is

1 the flow is shifted to a data reading process to be described later.

Fig. 108 is a flow chart which illustrates an example of a data reading phase in the character data processing method. S3301 to S3308 are respective steps. The data reading phase corresponds to that shown in Fig. 7.

When the personal computer PC receives the command NSC in step S3213 in the data transfer phase process, it stores the sent data from the remote apparatus in accordance with the command NSC into the internal file of the facsimile machine FAX 1 (S3301). Then, a discrimination is made whether or not the page timer for the internal file has flowed over (S3302). If an affirmative discrimination is made, the flow proceeds to step S3303 in which the disconnection command DCN for disconnecting the circuit is sent and the process is completed.



10

15

25

1 RS232C during the communication. When a command to
delete the command file is sent from the PC 3 to the
interface RS232C, the facsimile machine 1 deletes the
command file (the foregoing internal file) and thus
5 the data entry process is completed.

When data is read, a command to transfer the
file stored in the facsimile machine 1 to the PC 3 is
sent from the PC 3 to the interface RS232C. As a
result, the facsimile machine 1 transfers the read
10 data to the PC 3. The PC 3 causes data to enter the
internal data base DB, and then deletes read data
from the facsimile machine 1. Thus, the process is
completed.

As described above, the present invention
15 comprises steps of: sequentially converting entry
character code data to be caused to enter the facsimile
apparatus or the plurality of remote facsimile appara-
tuses into exclusive character code in the facsimile
apparatus while referring to a first conversion table
20 in accordance with a data entry command issued by the
external unit; causing the exclusive code array thus-
converted to be temporarily stored in the external
unit; and transferring the stored exclusive character
code to the facsimile apparatus or the plurality of
25 remote facsimile apparatuses to be caused to enter
the same. Therefore, the character code for exclu-
sively use in the connected facsimile apparatus or the

1 plurality of remote facsimile apparatus can be
transferred from outside to be caused to enter them.

Further, the present invention comprises
steps of: receiving entry character code data from
5 the facsimile apparatus or the plurality of remote
facsimile apparatuses in accordance with a data
reading command issued by the external unit;
sequentially converting the entry character code data
into exclusive character code in the facsimile appara-
10 tus while referring to a first conversion table;
causing the exclusive code array thus-converted to be
temporarily stored in the external unit; inversely
converting the stored exclusive character code array
into the entry character code data array while
15 referring to a second conversion table in accordance
with an instruction to display or print the stored
exclusive character code array; and reading the
converted entry character code array to display or
print the same. Therefore, the entry data about the
20 facsimile apparatuses on a network can collectively
be managed.

Therefore, the character code corresponding to
special characters for use in only the facsimile
machine can be transferred from an external apparatus.
25 Therefore, the special characters for use in only a
desired facsimile machine can easily be caused to
enter from the connected external apparatus. Further,

1 the same contents as the entry data can be displayed
or output by the external apparatus. Therefore, the
data entry operation and the display and printing of
the entry data can be performed from outside.

5 In addition to the foregoing embodiments, an
arrangement may be employed in which copying machines,
printers, image storage units and image processing
units and the like are connected to the facsimile
machine 2 and internal data in the foregoing appara-
10 tuses is read out, caused to enter and rewritten.

Although the invention has been described in
its preferred form with a certain degree of particu-
larly, it is understood that the present disclosure
of the preferred form has been changed in the details
15 of construction and the combination and arrangement
of parts may be resorted to without departing from
the spirit and the scope of the invention as
hereinafter claimed.

20

25

1 said center facsimile machine terminal writes
data on an arbitrary address of said memory in said
remote facsimile machine terminal and reads data from
said memory so that registry and maintenance are
5 performed from a remote position.

2. A facsimile communication system according to
claim 1, wherein said registry confirmation data is
check sum of said data and said generating means
10 calculates said check sum of each registry data region
in said memory.

3. A facsimile communication system according to
claim 1, wherein said registry confirmation data is
15 check sum of said data and said generating means
calculates said check sum of all registry data regions
in said memory.,

4. A facsimile communication system according to
20 claim 1, wherein said center facsimile machine
terminal sends data supplied from said external unit
to said remote facsimile machine terminal by using
a 300 bits/second procedure signal for a G3-facsimile
machine.

25
5. A facsimile communication system according to
claim 1, wherein said remote facsimile machine

1 terminal receives data supplied from said external
unit as a 9600 bits/second or 4800 bits/second G3-
facsimile image signal.

5 6. A facsimile communication system according to
claim 1, wherein recording of said data on said
memory region is performed while being divided in
accordance with the data quantity.

10 7. A facsimile communication system according to
claim 1, wherein said center facsimile machine
terminal further includes means for displaying, on
said external unit, said data read from an arbitrary
address in said memory in said remote facsimile
15 machine terminal.

8. A facsimile communication system comprising:
a center facsimile machine terminal which has a
communication function with a public circuit network
20 and to which an external unit for inputting data is
connected; and

one or more remote facsimile machine terminals
connected to said public circuit network, wherein
said center facsimile machine terminal has
25 means for sending data supplied from said
external unit to said remote facsimile machine
terminal by way of said public circuit network; and

1 said remote facsimile machine terminal has
 means for accumulating said data,
 means for analyzing the contents of said
accumulated data, and
5 means for initializing a predetermined memory
region in accordance with the results of said
analysis.

9. A facsimile communication system according to
10 claim 8, wherein said remote facsimile machine
terminal sets a predetermined initial value data in
said memory region in accordance with a predetermined
command.

15 10. A facsimile communication system according
to claim 8, wherein said center facsimile machine
terminal sends, to said remote facsimile machine
terminal, a command for executing said initialization.

20 11. A communication apparatus for performing
remote data entry to a facsimile machine by way of a
communication network, comprising:

transmission means for sending remote registry
data to said communication network;

25 receiving means for receiving response data from
said communication network;

recording means for recording transmission data

1 and receipt data as hysteresis data; and
transmitting means for transmitting said
hysteresis data recorded by said recording means.

5 12. A communication apparatus according to claim
11, wherein said transmitting means transmits said
hysteresis data to an external input/output unit.

10 13. A communication apparatus according to claim
12, further comprising input means for supplying data,
said input means inputs said data to be transmitted
by said transmission means from said input/output
unit.

15 14. A communication apparatus according to claim
11, wherein said recording means processes said
hysteresis data in such a manner that a transmission
identifier is added to said transmission data and a
receipt identifier is added to said receipt data.

20 15. A communication apparatus according to claim
11, further comprising means for transmitting image
data, wherein said remote registry data is managed
as the same form file as that for said image data.

25 16. A communication apparatus according to claim
11, wherein a 300 bps procedure signal for a G3

1 facsimile machine is used.

17. A communication apparatus according to claim
11, wherein a 9600 bps or 4800 bps image signal for a
5 G3 facsimile machine is used.

18. A communication apparatus according to claim
11, wherein said remote registry data and said
hystresis data are handled as files, and a remote
10 registry data file and a hystresis data file
corresponding to said remote registry data file are
managed while being given continuous file numbers.

19. A communication apparatus disposed between a
15 host unit and a communication network and acting to
communicate with a facsimile machine by way of said
communication network, said communication apparatus
comprising:

communication means for setting remote registry
20 data to said facsimile machine by way of said
communication network; and

means for sending, to said host unit, communica-
tion state information denoting whether or not
communication by means of said communication means is
25 being performed.

20. A communication apparatus according to claim

1 19, wherein said communication state information is
communication state information which is performed
previously or which is being performed by said
communication means.

5

21. A communication apparatus according to claim 19 further comprising input means for inputting an instruction from said host unit, wherein said communication state information is transmitted in accordance with an instruction from said host.

22. A communication apparatus disposed between a host unit and a communication network and acting to communicate with a facsimile machine by way of said communication network, said communication apparatus comprising:

means for communicating with said facsimile machine by way of said communication network to read function information about the function of said facsimile machine; and

transmitting means for transmitting said function information to said host unit.

23. A communication apparatus according to claim
25 21 further comprising input means for inputting an
instruction from said host unit, wherein said
communication state information is transmitted in

1 accordance with an instruction from said host.

24. A facsimile apparatus connected to a
communication circuit and having a maintenance func-
5 tion which is capable of reading and writing set data
by way of said communication circuit, said facsimile
apparatus comprising:

switch means;

making means for making function data for
10 declaring possessed functions in accordance with a
state set by said switch means; and

means for transmitting said function data.

25. A facsimile apparatus according to claim 24,
15 wherein said switch means sets whether or not a set
data maintenance function is possessed, and said
making means makes data for declaring whether or not
said set data maintenance function is possessed.

20 26. A facsimile apparatus according to claim 24,
wherein said switch means sets whether or not a set
data maintenance function is possessed and write
inhibition of said set data, and said making means
makes data for declaring whether or not said set data
25 maintenance function is possessed and said write
inhibition of said set data.

1 27. A facsimile apparatus according to claim 26
further comprising, as said switch means, another
switch for setting whether or not another set data
maintenance function is possessed, and said making
5 means sets whether or said data maintenance function
is possessed in accordance with the AND of the states
of said two switches for setting whether or not said
set data maintenance function is possessed.

10 28. A facsimile apparatus according to claim 26
further comprising, as said switch means, another
write inhibition switch, and said making means sets
write inhibition in accordance with the AND of the
states of said two write inhibition switches.

15 29. A remote data registry system comprising:
a center; and
a terminal connected to said center by a
communication circuit, wherein
20 said center including
range input means for inputting a range of data
which is the subject of remote data registry;
limiting means for limiting data input in
accordance with said range supplied by said input
25 means; and
data input means for inputting data which is the
subject of remote data registry under limitation

1

5

a center; and

15

20

25

5 32. A remote data registry system according to
claim 31, wherein said processing means reads said
operation state data recorded by said recording
means and makes a response by transmitting said data.

15 34. A remote data registry system according to
claim 31, wherein said processing means initializes
said operation state data recorded by said recording
means.

35. A character data input/output method of a
character data processing method for a facsimile
apparatus which has a communication interface with
external units and which is connected to a plurality
of remote facsimile apparatuses by way of a
predetermined communication circuit so that a
character data input/output process is performed
mutually, said character data input/output method of

1 a character data processing method for a facsimile
apparatus comprising steps of:

sequentially converting registry character code
data to be caused to register said facsimile apparatus
5 or said plurality of remote facsimile apparatuses
into exclusive character code in said facsimile
apparatus while referring to a first conversion table
in accordance with a data registry command issued by
said external unit;

10 causing said exclusive code array thus-converted
to be temporarily stored in said external unit; and

transferring said stored exclusive character
code to said facsimile apparatus or said plurality of
remote facsimile apparatuses to be caused to register
15 the same.

36. A character data input/output method of a
character data processing method for a facsimile
apparatus which has a communication interface with
20 external units and which is connected to a plurality
of remote facsimile apparatuses by way of a predeter-
mined communication circuit so that a character data
input/output process is performed mutually, said
character data input/output method of a character
25 data processing method for a facsimile apparatus
comprising steps of:

FIG. 1A

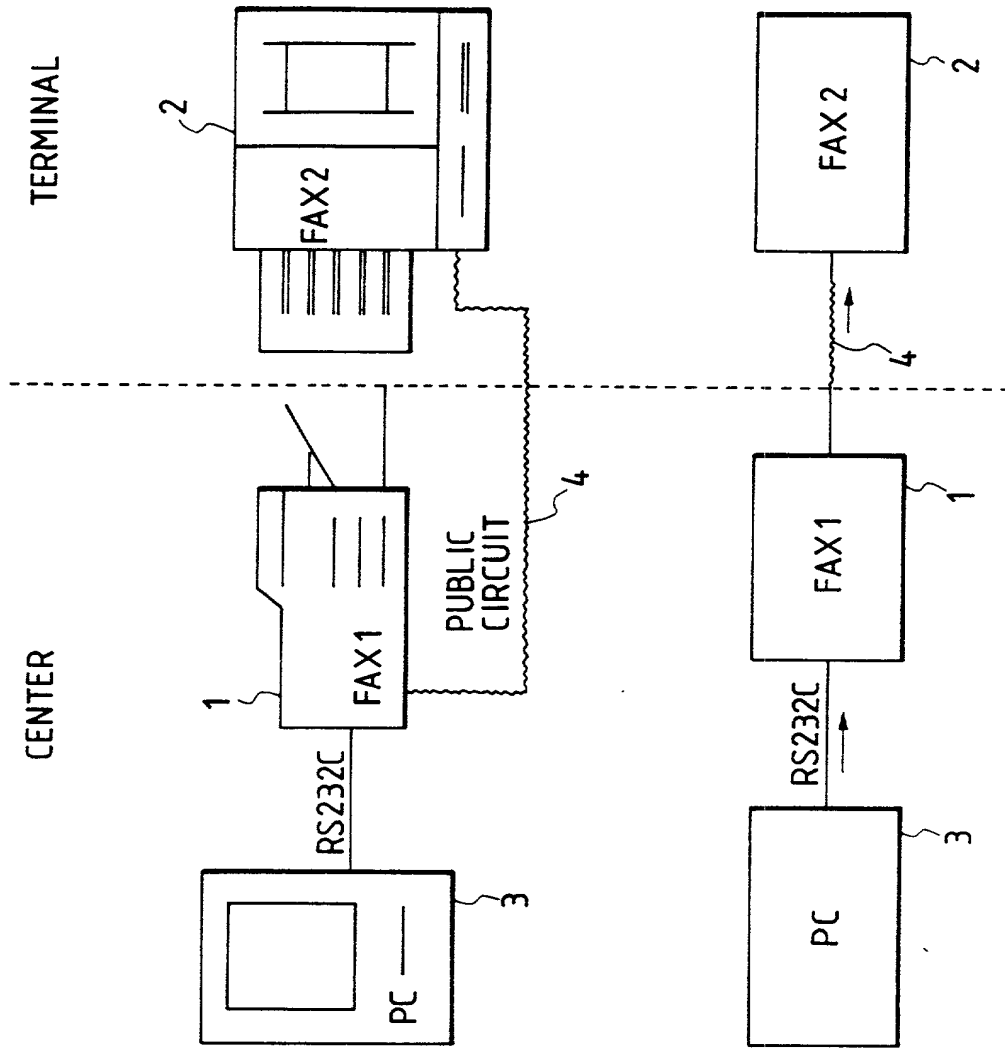


FIG. 1B

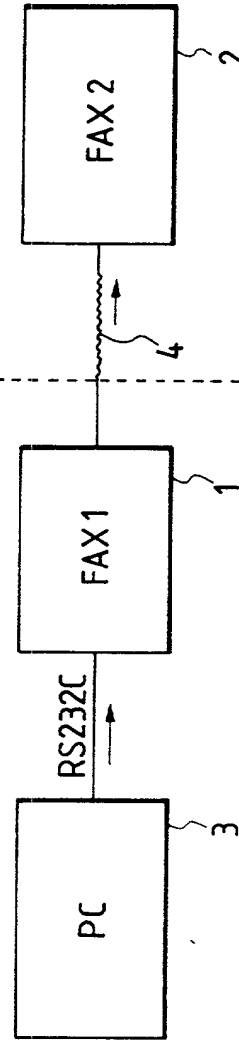


FIG. 2

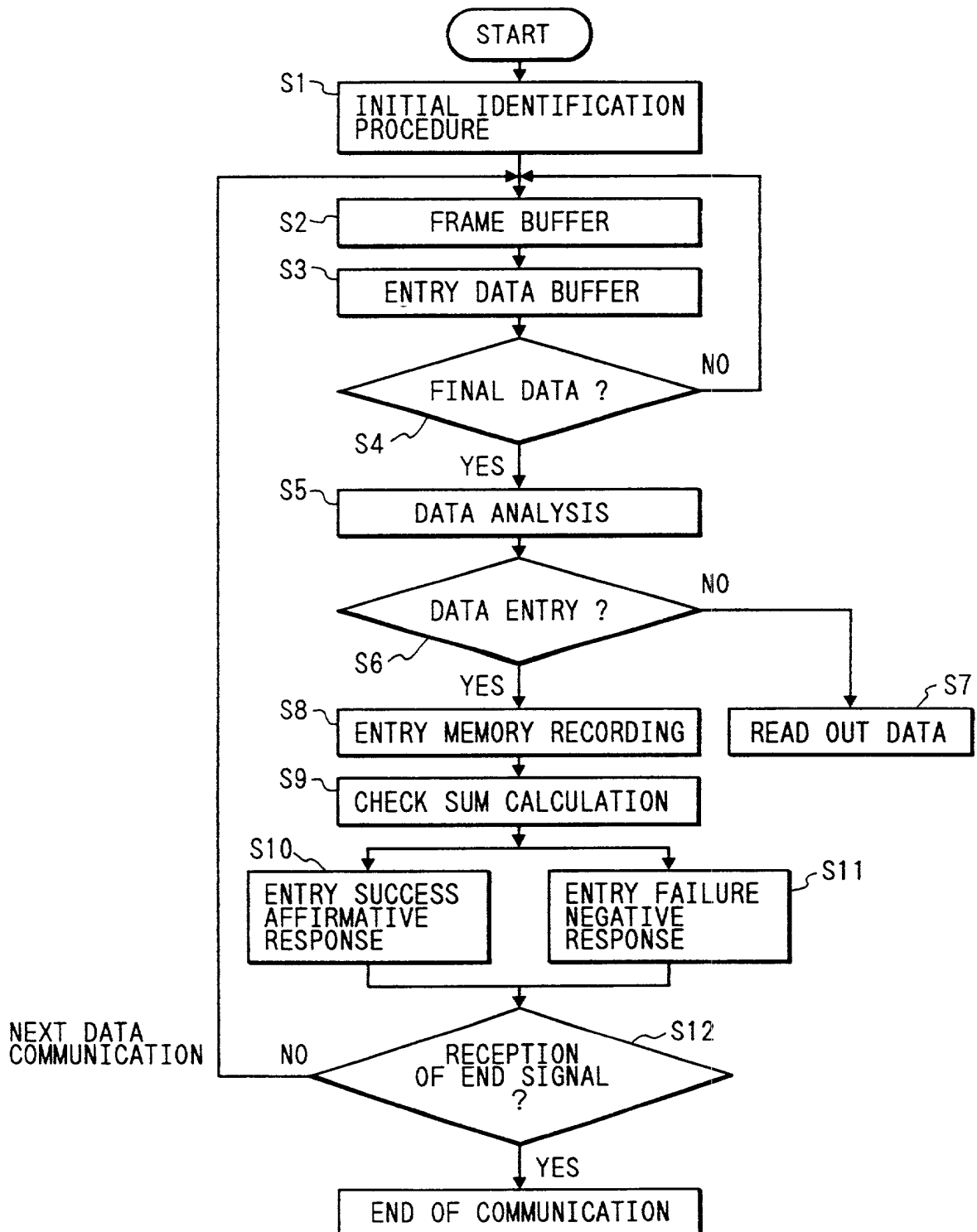


FIG. 3A

DATA ENTRY MENU

<< REMOTE DIAGNOSTIC SYSTEM >>

>>ONE-TOUCH/SHORTENED NUMBER

>>DESTINATION CODE _____

>>DESTINATION ABBREVIATION _____

>>TRANSMISSION RATE **HIGH**

>>OVERSEAS TRANSMISSION **0**

FIG. 3B

DATA TRANSMISSION MENU

<< REMOTE DIAGNOSTIC SYSTEM >>

[DATA TRANSMISSION]

>>DATA SELECTION

ALL DATA

>>CONNECTION NUMBER INPUT (20 FIGURES)

>>EXECUTION

OPERATION CONTENTS : **DIALING**

FIG. 4

EXAMPLE OF REMOTE ENTRY COMMAND

(UNDERLINED PORTION : COMMAND)

DI01 ONE-TOUCH/SHORTENED DIAL NUMBER

DT03 3757 6954 DESTINATION CODE

| DNABC | DESTINATION | ABBREVIATION |
|-------|-------------|--------------|
| 1 | 1 | 1 |
| 2 | 2 | 2 |
| 3 | 3 | 3 |
| 4 | 4 | 4 |
| 5 | 5 | 5 |
| 6 | 6 | 6 |
| 7 | 7 | 7 |
| 8 | 8 | 8 |
| 9 | 9 | 9 |
| 10 | 10 | 10 |
| 11 | 11 | 11 |
| 12 | 12 | 12 |
| 13 | 13 | 13 |
| 14 | 14 | 14 |
| 15 | 15 | 15 |
| 16 | 16 | 16 |
| 17 | 17 | 17 |
| 18 | 18 | 18 |
| 19 | 19 | 19 |
| 20 | 20 | 20 |
| 21 | 21 | 21 |
| 22 | 22 | 22 |
| 23 | 23 | 23 |
| 24 | 24 | 24 |
| 25 | 25 | 25 |
| 26 | 26 | 26 |
| 27 | 27 | 27 |
| 28 | 28 | 28 |
| 29 | 29 | 29 |
| 30 | 30 | 30 |
| 31 | 31 | 31 |
| 32 | 32 | 32 |
| 33 | 33 | 33 |
| 34 | 34 | 34 |
| 35 | 35 | 35 |
| 36 | 36 | 36 |
| 37 | 37 | 37 |
| 38 | 38 | 38 |
| 39 | 39 | 39 |
| 40 | 40 | 40 |
| 41 | 41 | 41 |
| 42 | 42 | 42 |
| 43 | 43 | 43 |
| 44 | 44 | 44 |
| 45 | 45 | 45 |
| 46 | 46 | 46 |
| 47 | 47 | 47 |
| 48 | 48 | 48 |
| 49 | 49 | 49 |
| 50 | 50 | 50 |
| 51 | 51 | 51 |
| 52 | 52 | 52 |
| 53 | 53 | 53 |
| 54 | 54 | 54 |
| 55 | 55 | 55 |
| 56 | 56 | 56 |
| 57 | 57 | 57 |
| 58 | 58 | 58 |
| 59 | 59 | 59 |
| 60 | 60 | 60 |
| 61 | 61 | 61 |
| 62 | 62 | 62 |
| 63 | 63 | 63 |
| 64 | 64 | 64 |
| 65 | 65 | 65 |
| 66 | 66 | 66 |
| 67 | 67 | 67 |
| 68 | 68 | 68 |
| 69 | 69 | 69 |
| 70 | 70 | 70 |
| 71 | 71 | 71 |
| 72 | 72 | 72 |
| 73 | 73 | 73 |
| 74 | 74 | 74 |
| 75 | 75 | 75 |
| 76 | 76 | 76 |
| 77 | 77 | 77 |
| 78 | 78 | 78 |
| 79 | 79 | 79 |
| 80 | 80 | 80 |
| 81 | 81 | 81 |
| 82 | 82 | 82 |
| 83 | 83 | 83 |
| 84 | 84 | 84 |
| 85 | 85 | 85 |
| 86 | 86 | 86 |
| 87 | 87 | 87 |
| 88 | 88 | 88 |
| 89 | 89 | 89 |
| 90 | 90 | 90 |
| 91 | 91 | 91 |
| 92 | 92 | 92 |
| 93 | 93 | 93 |
| 94 | 94 | 94 |
| 95 | 95 | 95 |
| 96 | 96 | 96 |
| 97 | 97 | 97 |
| 98 | 98 | 98 |
| 99 | 99 | 99 |
| 100 | 100 | 100 |

DS01 TRANSMISSION RATE

FIG. 5

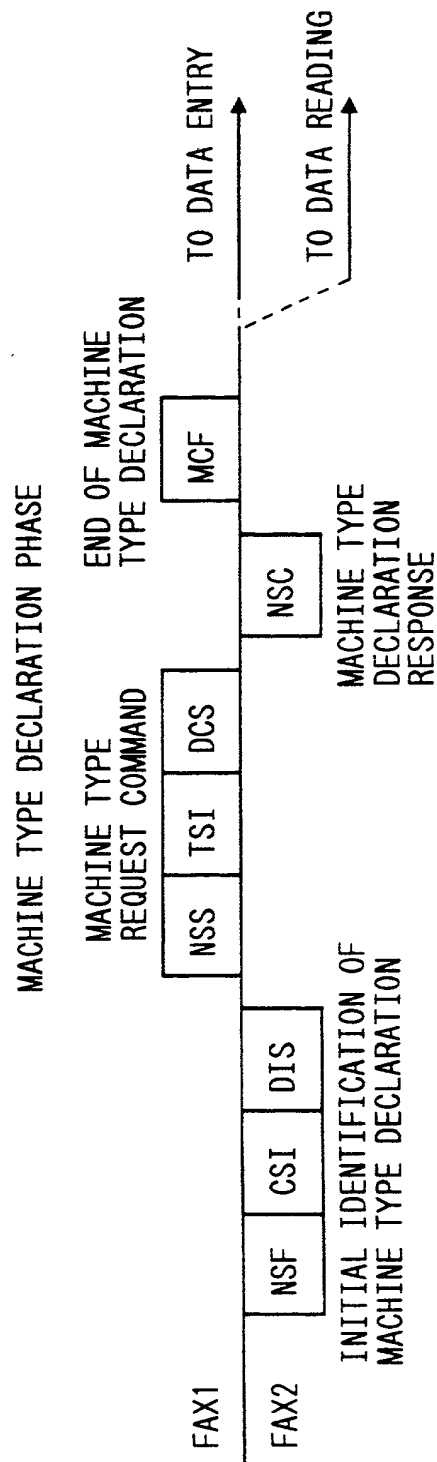


FIG. 6

DATA ENTRY PHASE

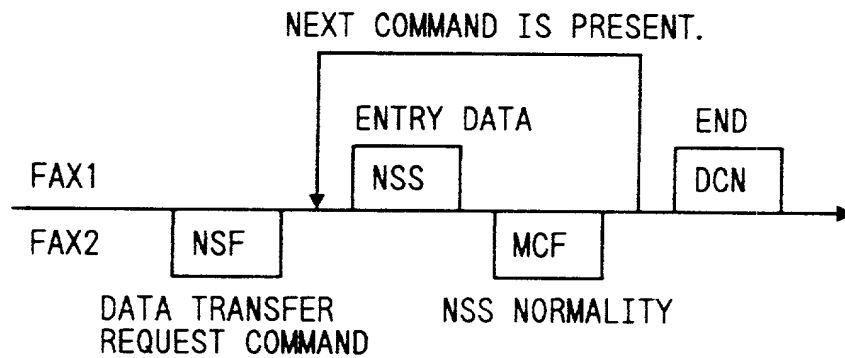
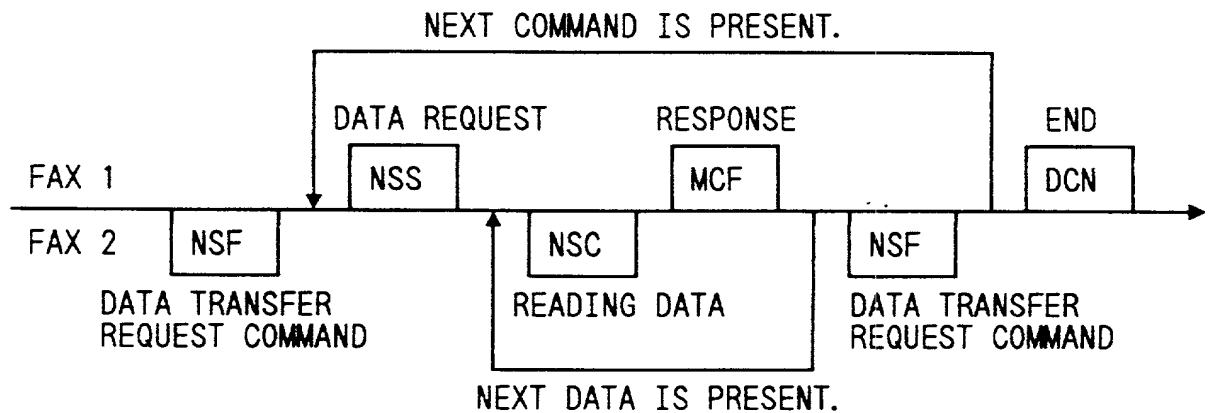


FIG. 7

DATA READING PHASE



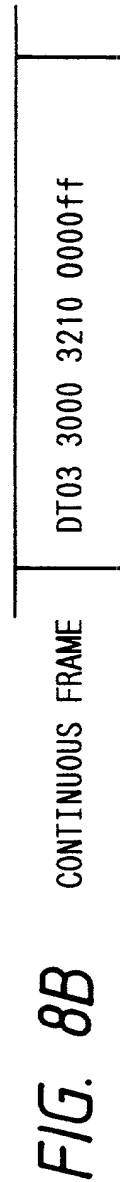
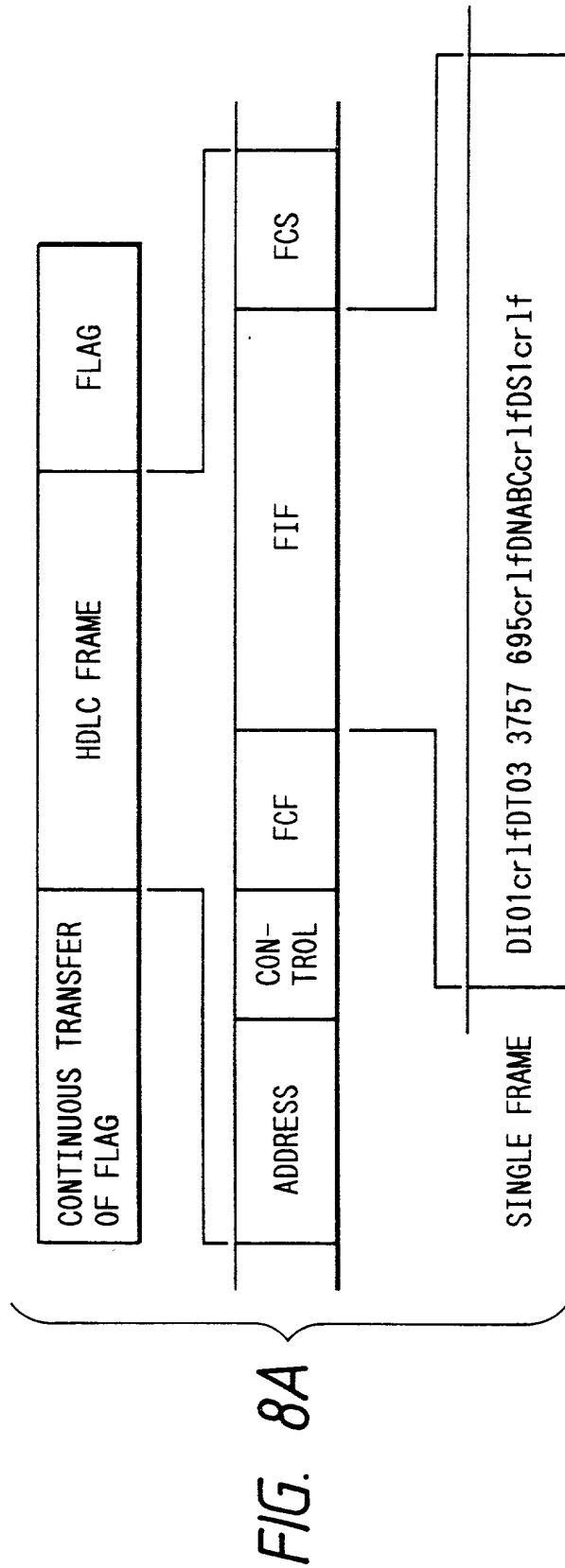


FIG. 9

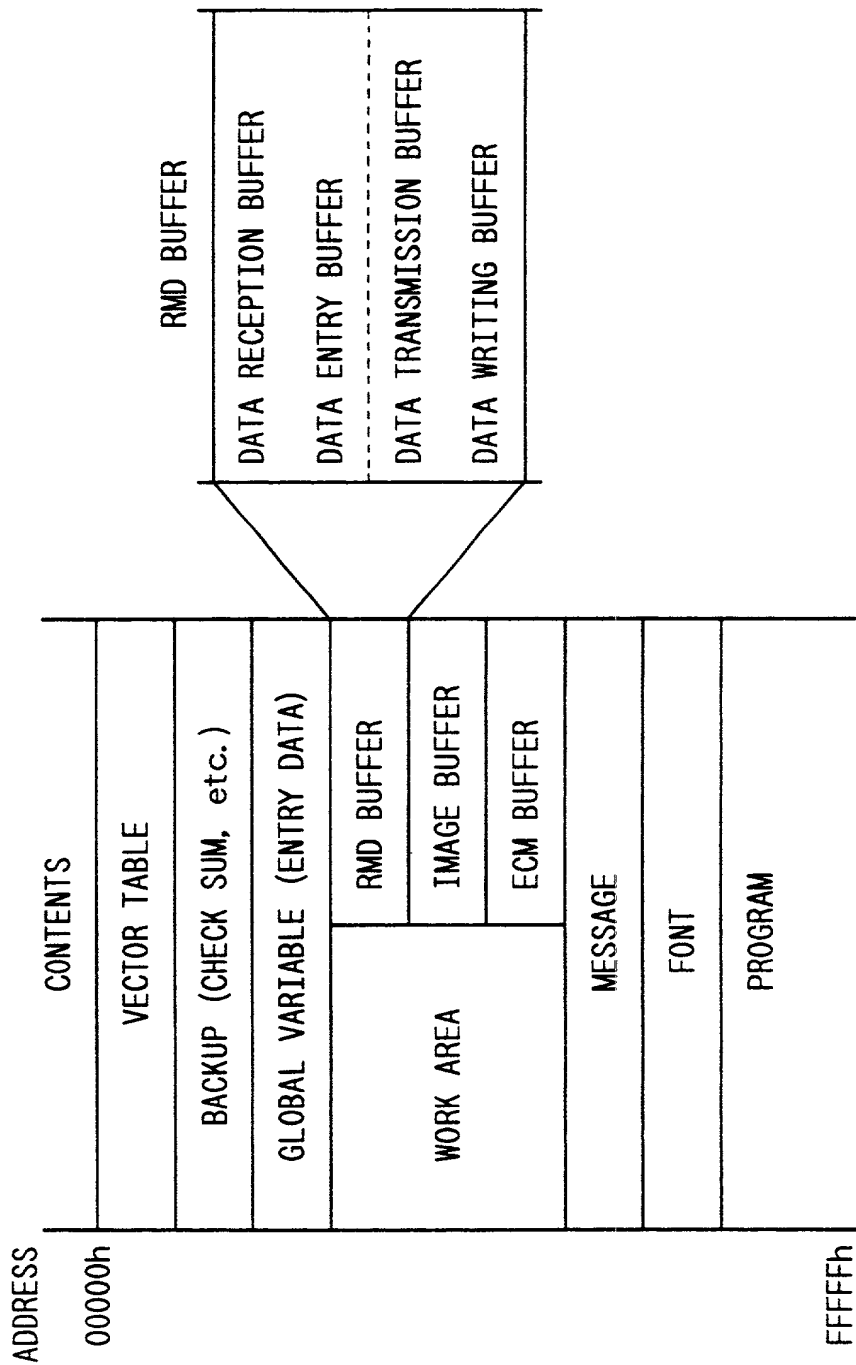


FIG. 10

| BACKUP AREA | CONTENTS OF MEMORY (HEXADECIMAL NOTATION) | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | |
| CHECK SUM DATA | <u>A1 23 32 13 42 12 32 12 43 EF FF 3A DF EC CB FA</u> (a) (b) (c) (z) USER DATA, TEL DATA, SERVICE DATA | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| ENTRY DATA AREA | | | | | | | | | | | | | | | | |
| USER DATA AREA SUM TOTAL DATA → CHECK SUM (a) | 00 FF 00 FF 33 30 33 37 35 37 20 36 39 35 34 00 FF FF FF FF 43 54 55 54 32 13 34 FF FF FF FF FF FF FF FF FF 43 54 55 54 32 13 34 FF FF FF FF FF | | | | | | | | | | | | | | | |
| TEL DATA AREA SUM TOTAL DATA → CHECK SUM (b) | FF FF FF FF 43 54 55 54 32 13 34 FF FF FF FF FF FF DD EC DE AB 43 23 14 54 35 45 23 43 56 00 00 FF FF FF FF 43 54 55 54 32 13 34 FF FF FF FF FF | | | | | | | | | | | | | | | |
| SERVICE DATA AREA SUM TOTAL DATA → CHECK SUM (c) | 00 FF 00 FF 33 30 33 37 35 37 20 36 39 35 34 00 FF FF FF FF 43 54 55 54 32 13 34 FF FF FF FF FF FF FF FF FF 43 54 55 54 32 13 34 FF FF FF FF FF | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

- 1) CHECK SUM CALCULATION IS EXECUTED IN ONE DATA AREA.
EXAMPLE: ONLY (a) IS CALCULATED. SUM TOTAL IS SIMPLY CALCULATED REGARDLESS OF DIGIT OVERFLOW.
- 2) CHECK SUM CALCULATION IS EXECUTED IN ALL DATA AREAS.
EXAMPLE: (a) TO (z) ARE CALCULATED. SUM TOTAL IS SIMPLY CALCULATED REGARDLESS OF DIGIT OVERFLOW.



FIG. 12

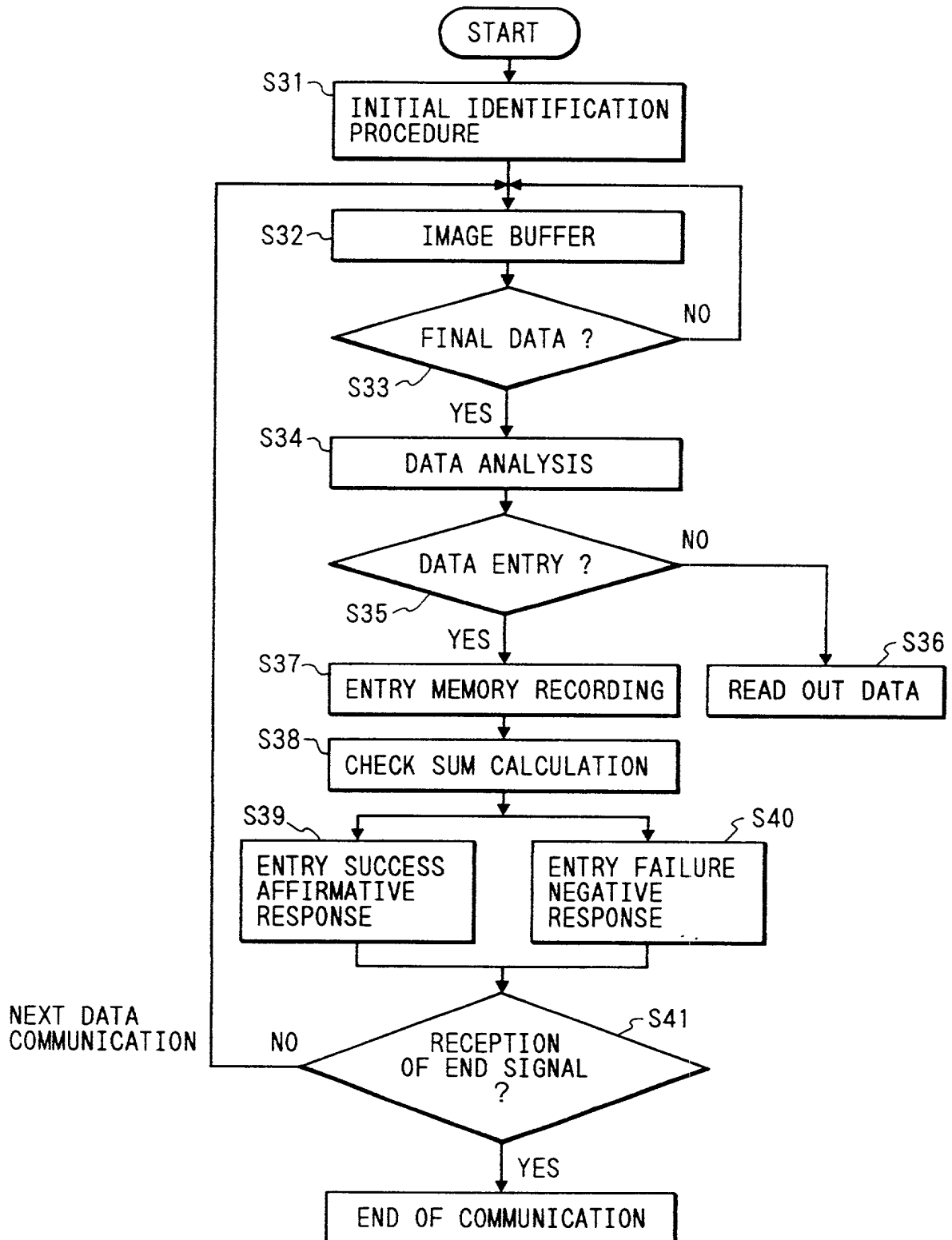


FIG. 13

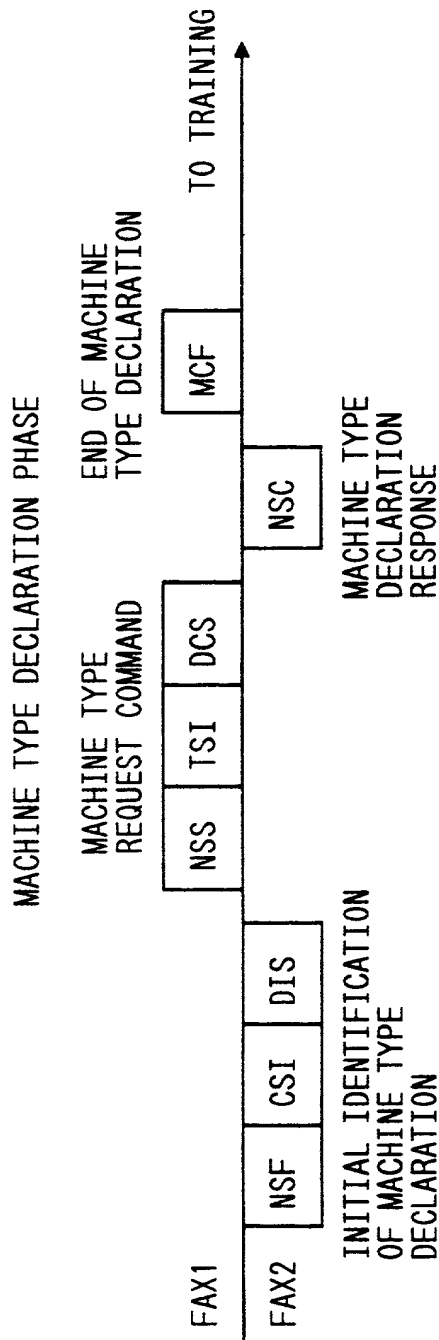


FIG. 14

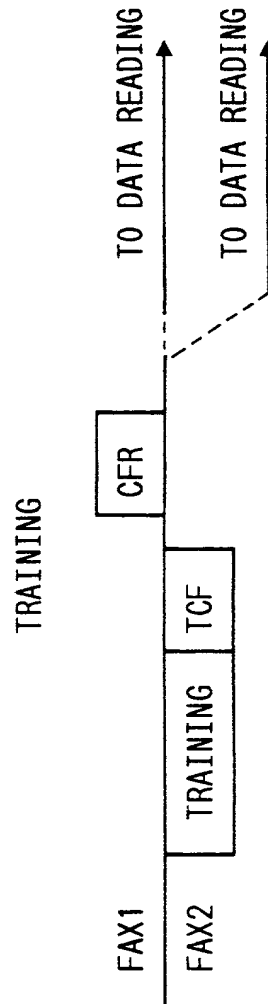


FIG. 15

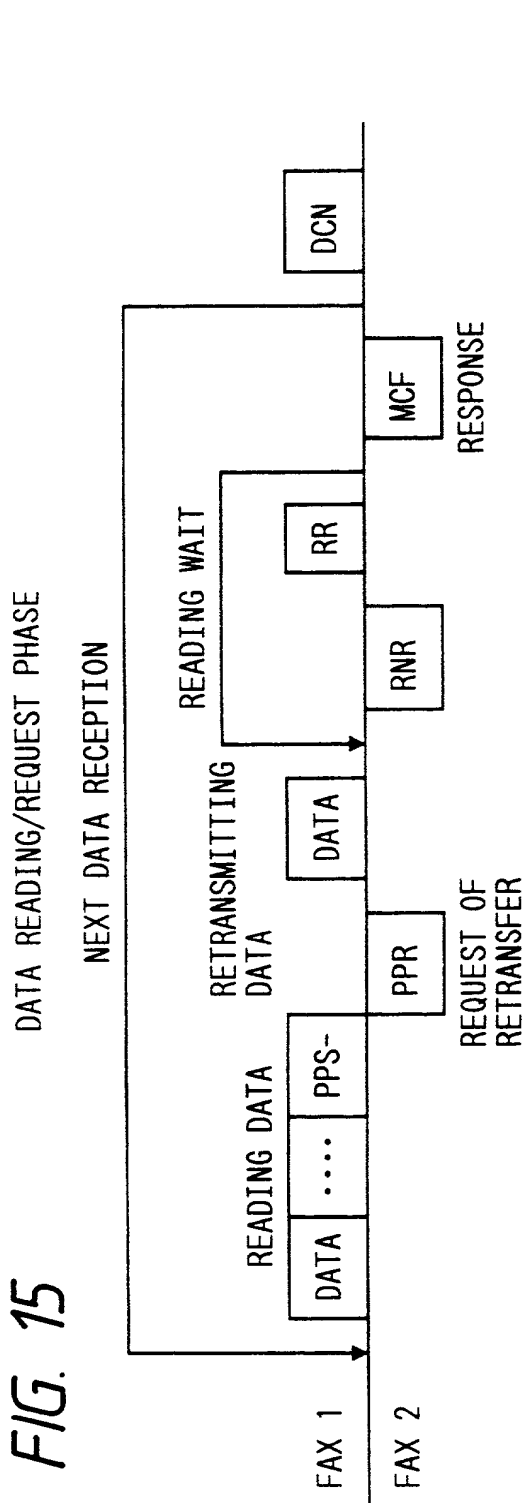


FIG. 16

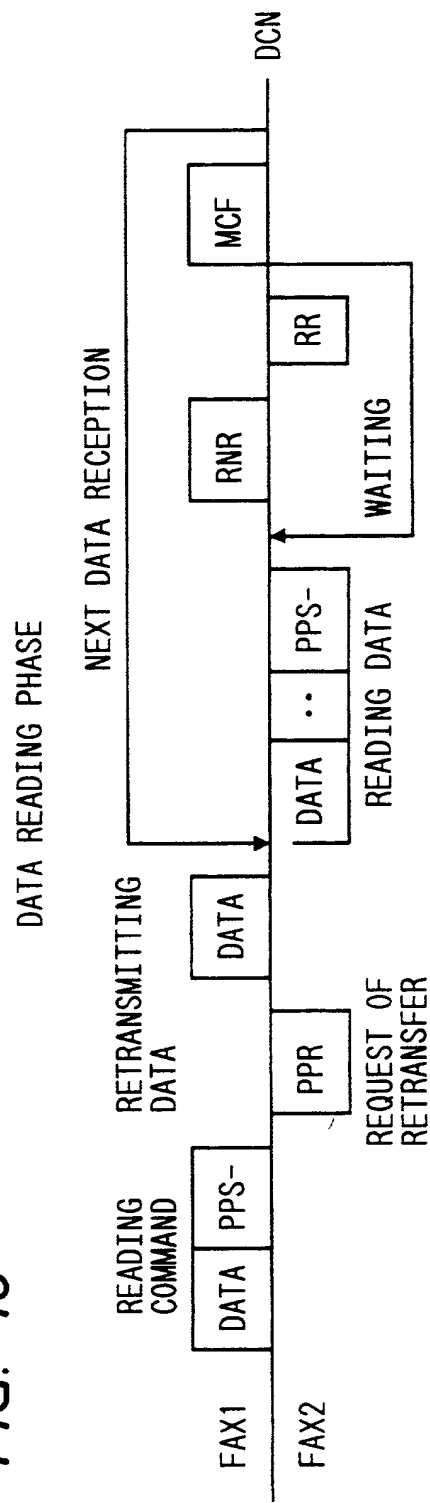


FIG. 17

| |
|----------|
| FIG. 17A |
| FIG. 17B |

FIG. 17A

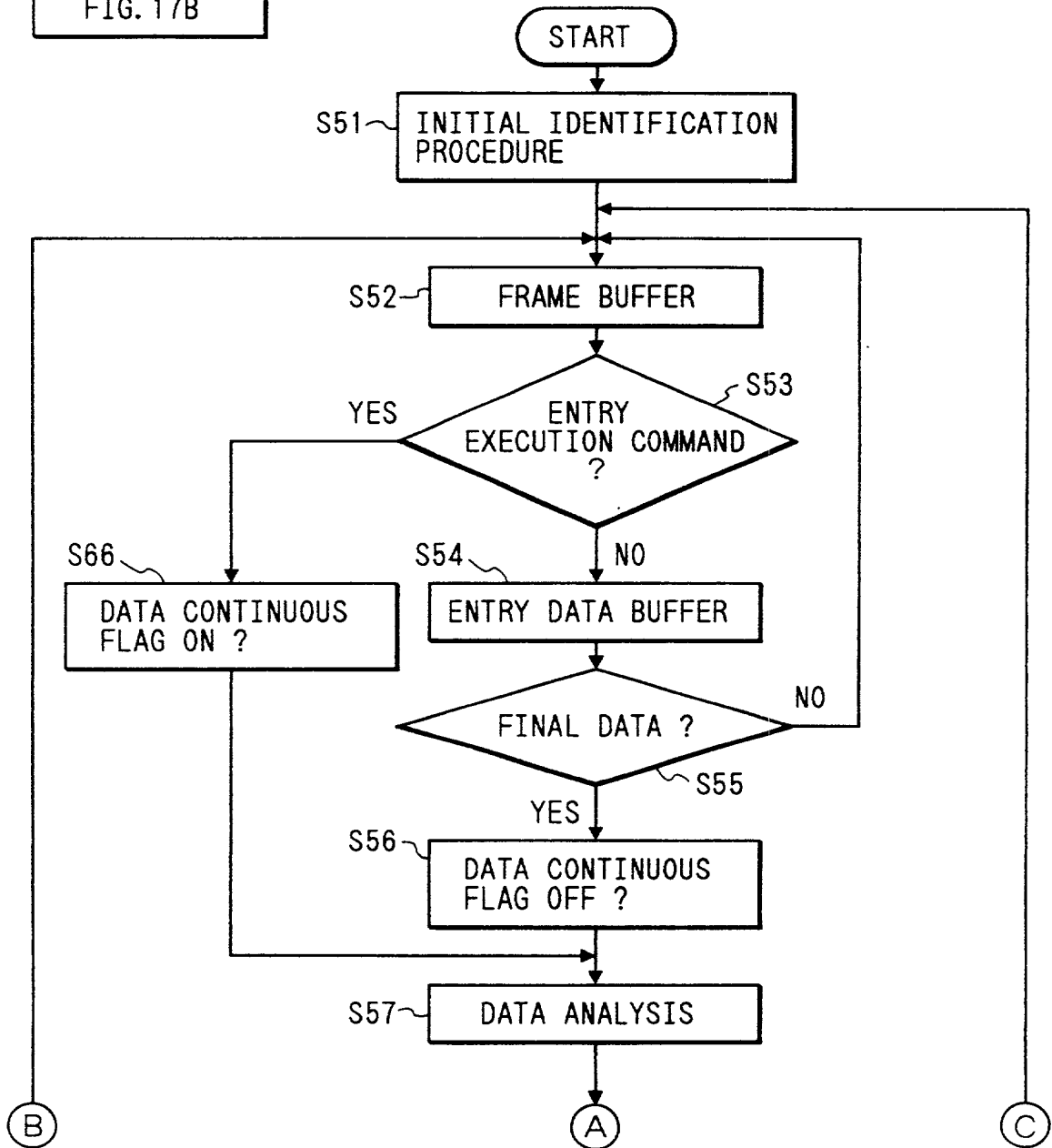


FIG. 17B

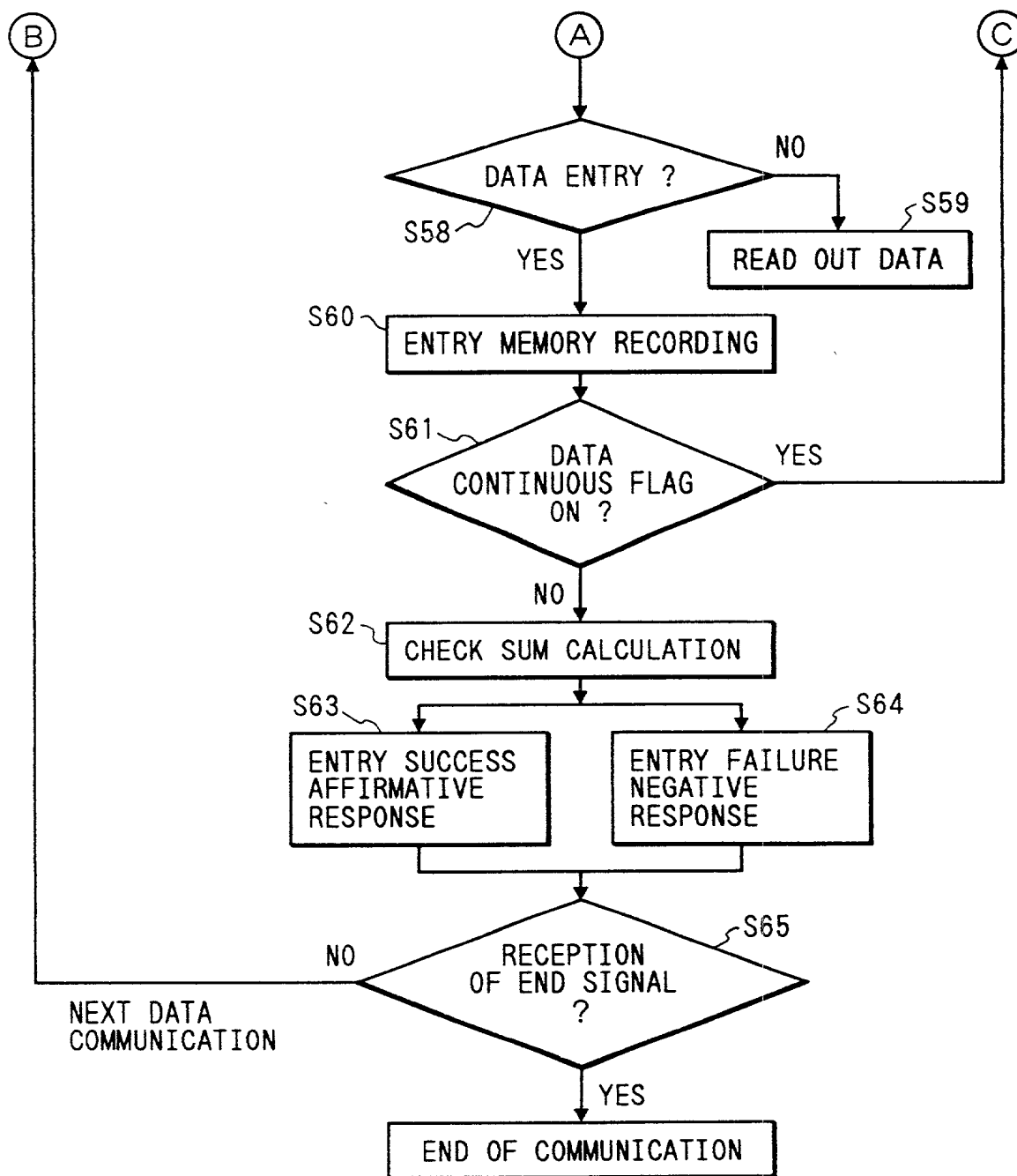
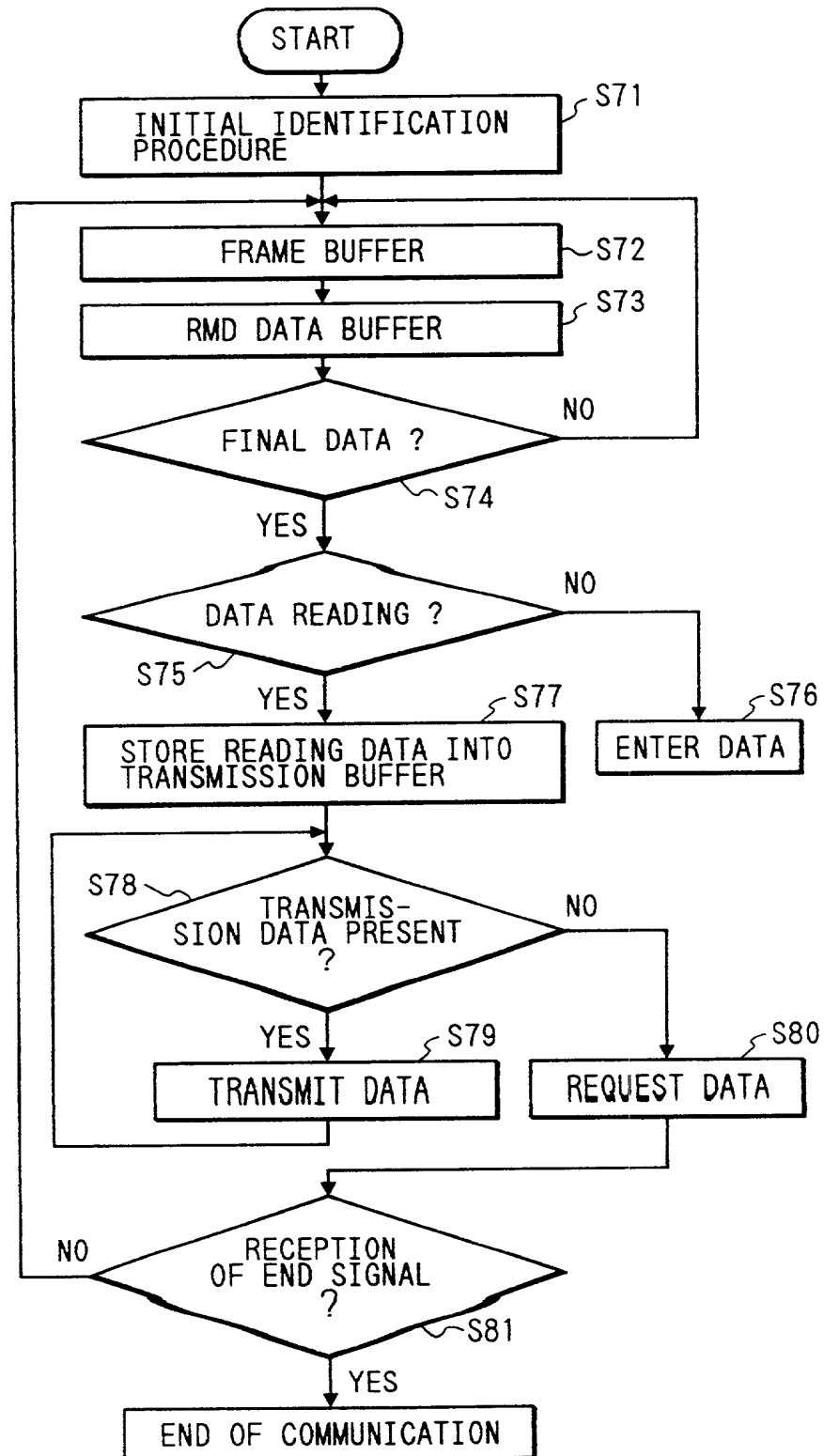


FIG. 18



[illegible]

| | | REMOTE COMMAND | READING DATA | EXAMPLE OF COMMAND |
|-----------------|---------------------------------|-------------------|---------------------------------|-----------------------|
| REMOTE READING | | DD | ONE-TOUCH/SHORTENED DIAL | DD |
| | | SD | SERVICE DATA | SD |
| | | TD | CALLING PERSON NAME | TD |
| | | UD | USER DATA | UD |
| REMOTE ENTRY | ONE-TOUCH/ SHORTENED DIAL | DI | ONE-TOUCH/SHORTENED DIAL NUMBER | DI01 |
| | | DT | DESTINATION CODE | DT03 3757 6954 |
| | | DN | DESTINATION ABBREVIATION | DNABC Inc. |
| | | DS | TRANSMISSION RATE | DS14400 |
| | | DO | INTERNATIONAL CIRCUIT | DO3 |
| | SERVICE DATA | SI | SERVICE INDEX | SI01 |
| | | SS | SERVICE DATA | SS0102006050... |
| | | ST | TYPE SET | STEUROPE |
| | CALLING PERSON NAME | TI | CALLING PERSON NAME NUMBER | TI01 |
| | | TN | CALLING PERSON NAME | TNSugawa |
| | USER DATA | UI | USER INDEX | UI01 |
| | | UT | USER TEL No. | UT03 3757 6955 |
| | | UN | USER ABBREVIATION | UNSugawa Kazu |

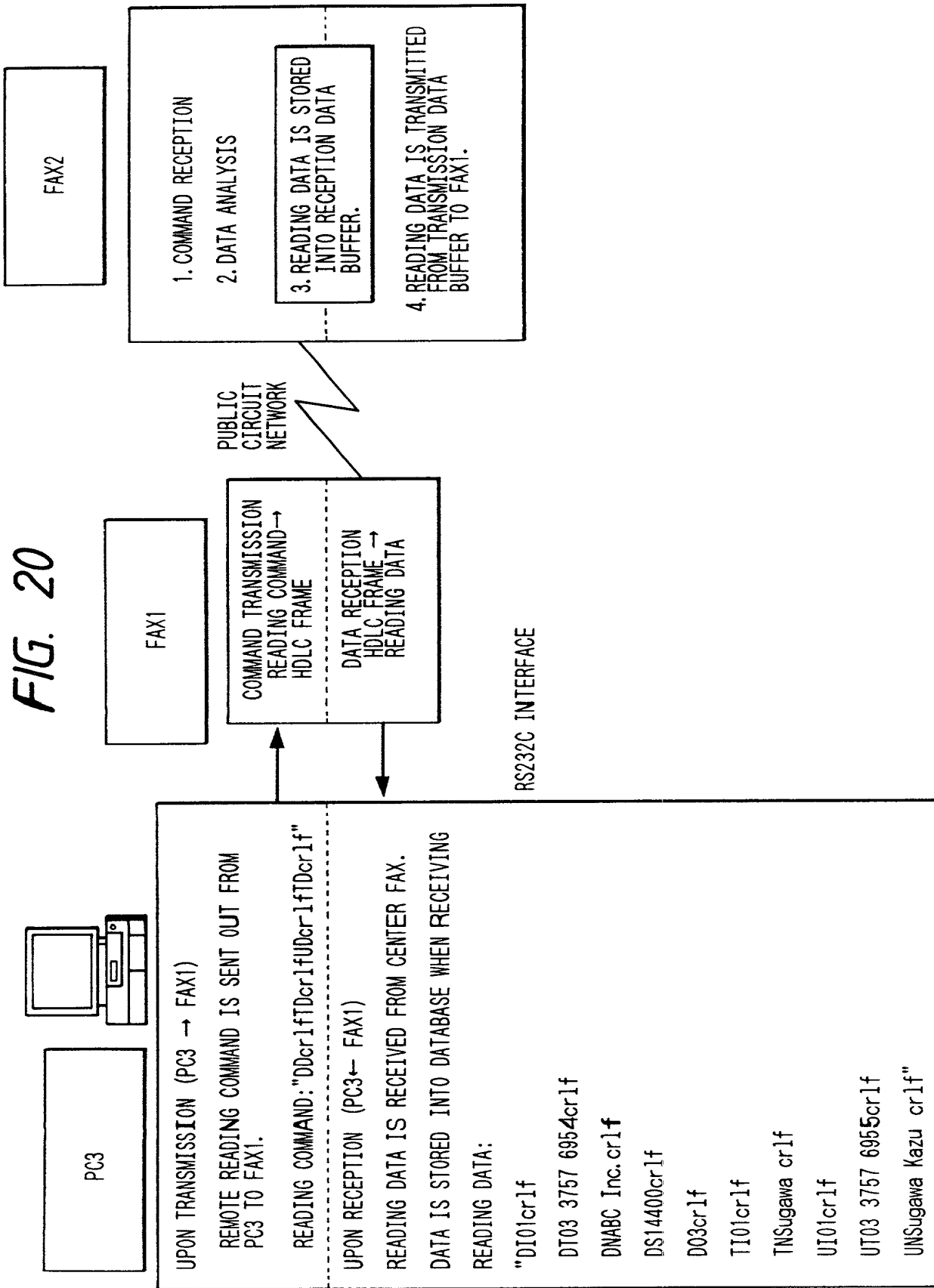


FIG. 21

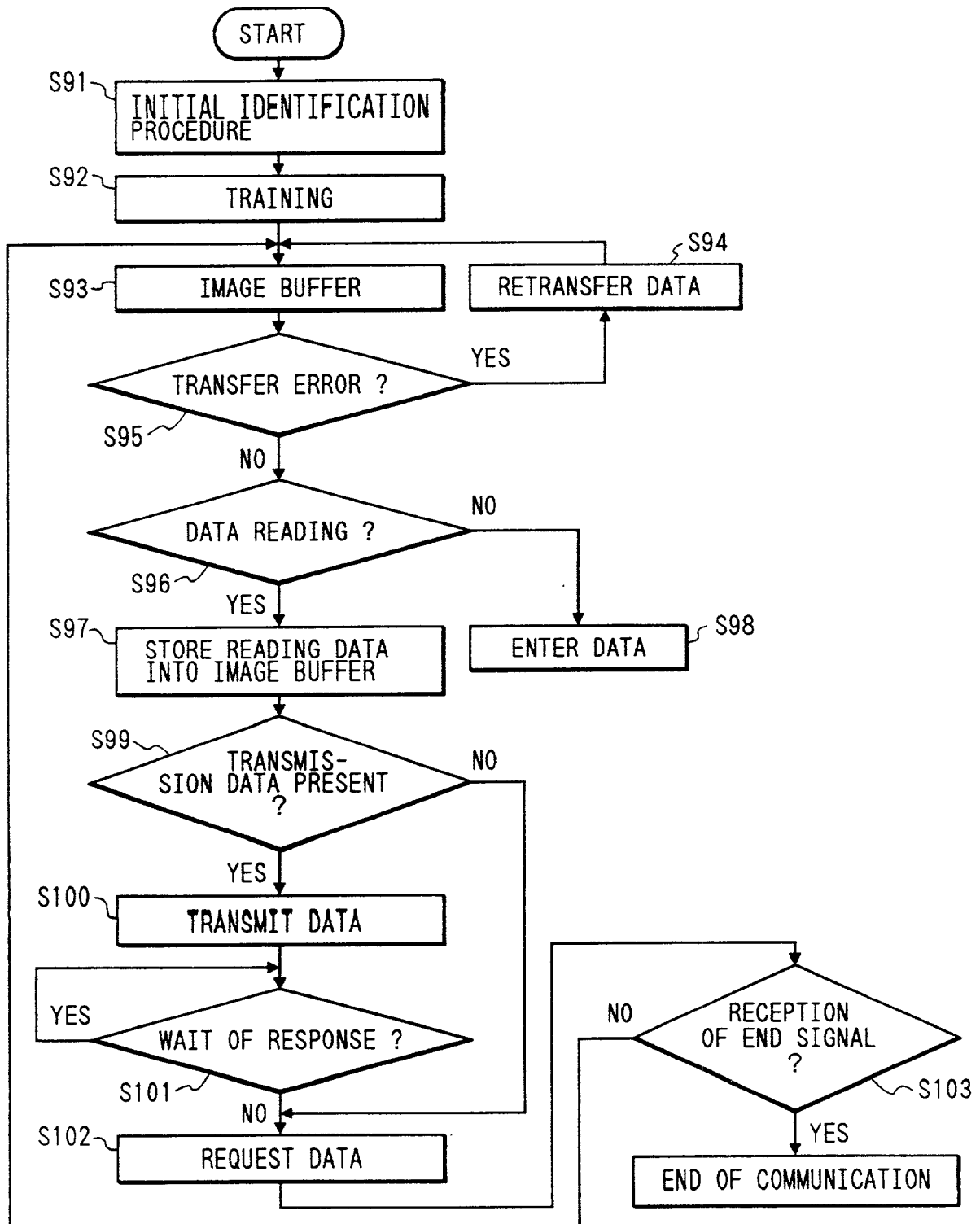


FIG. 22

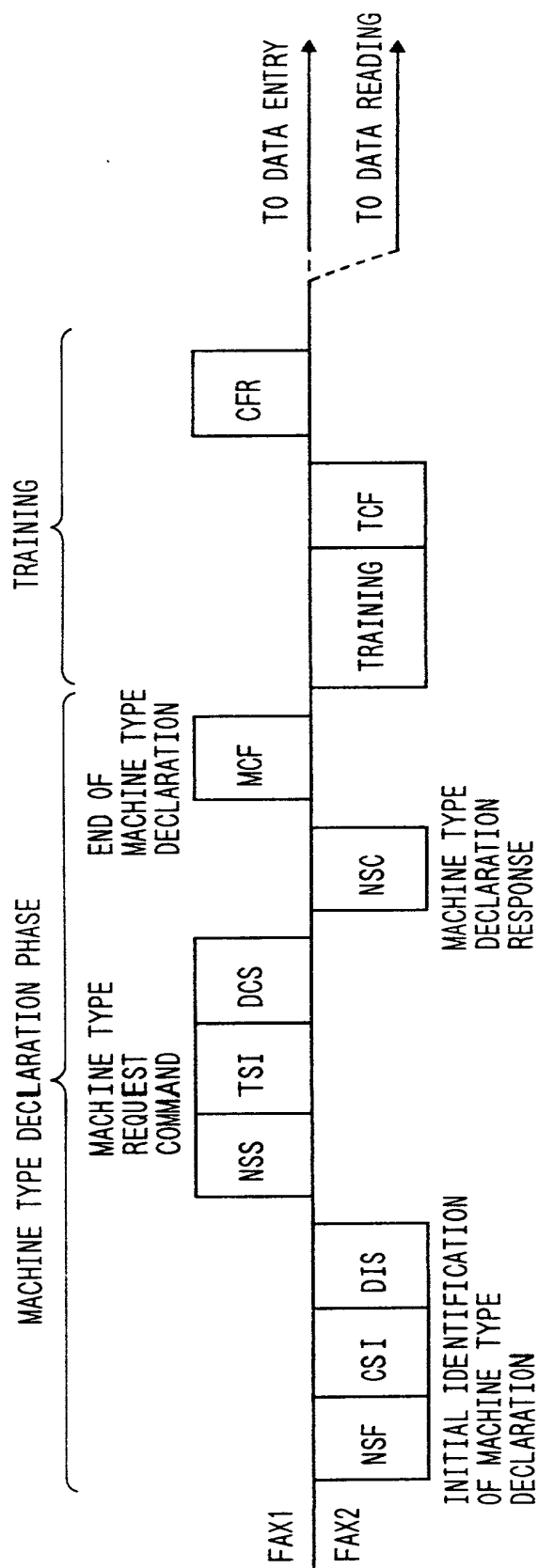


FIG. 23

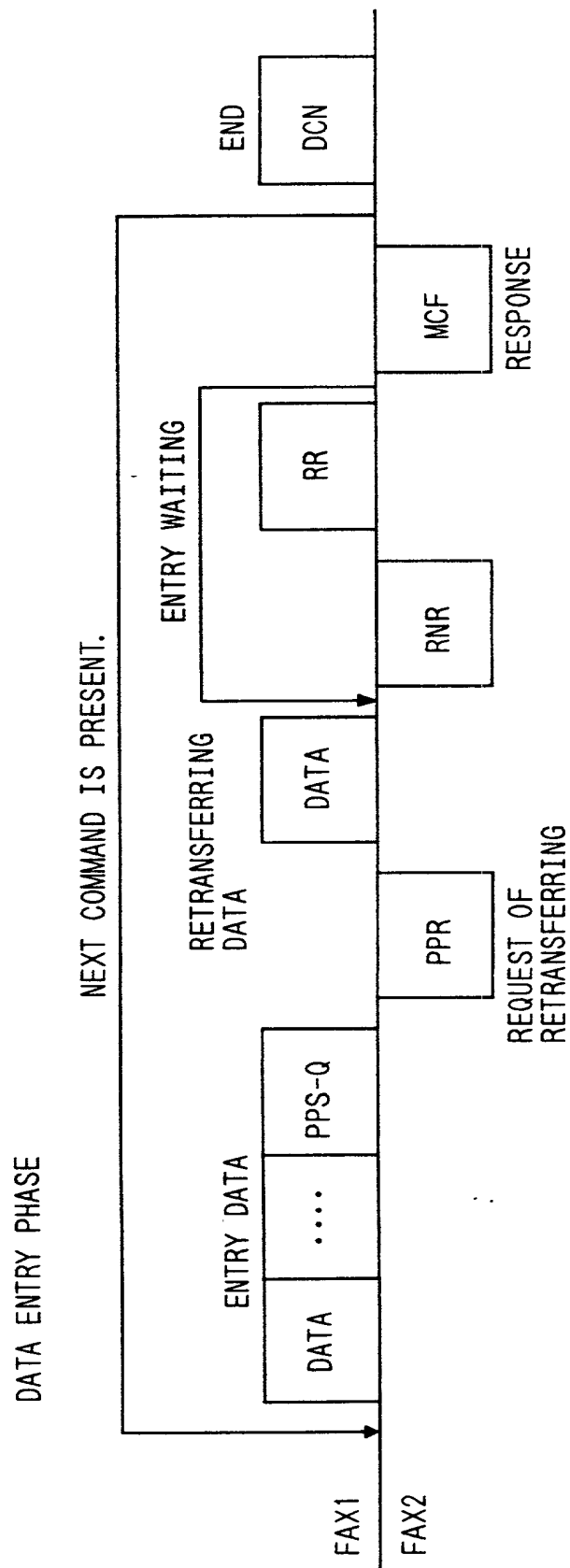


FIG. 24

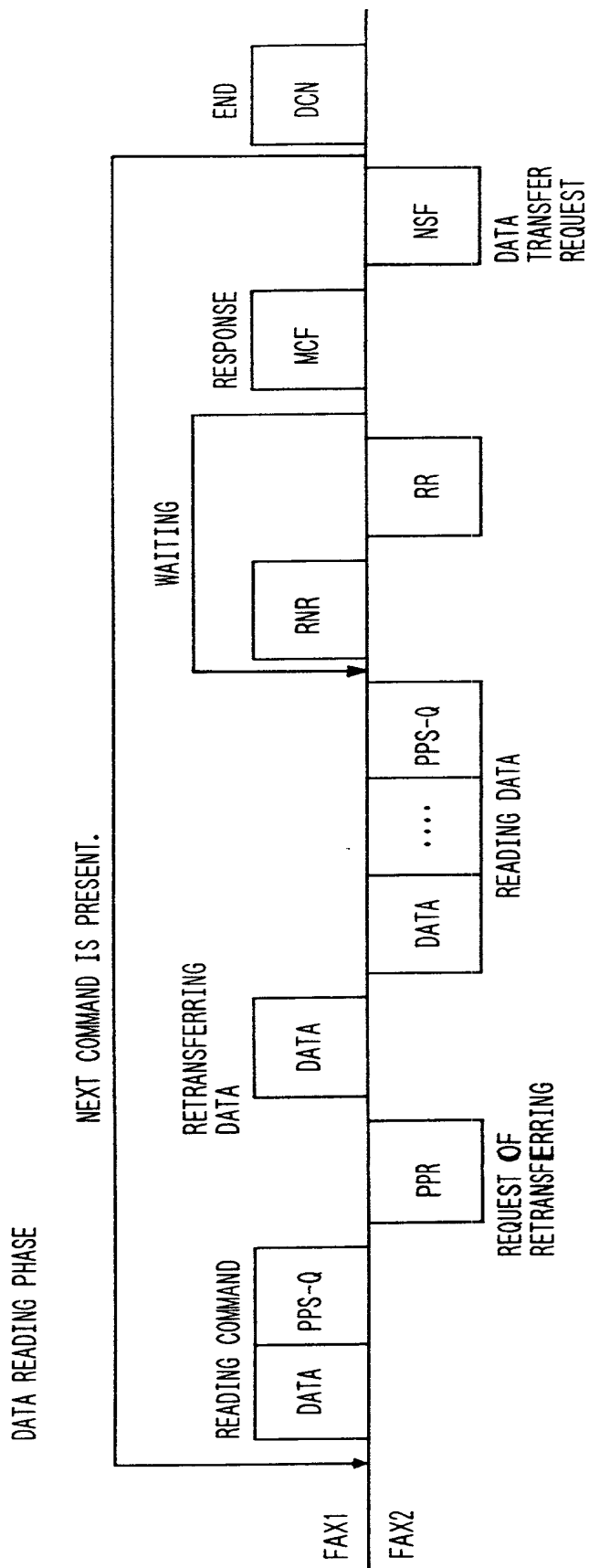


FIG. 25

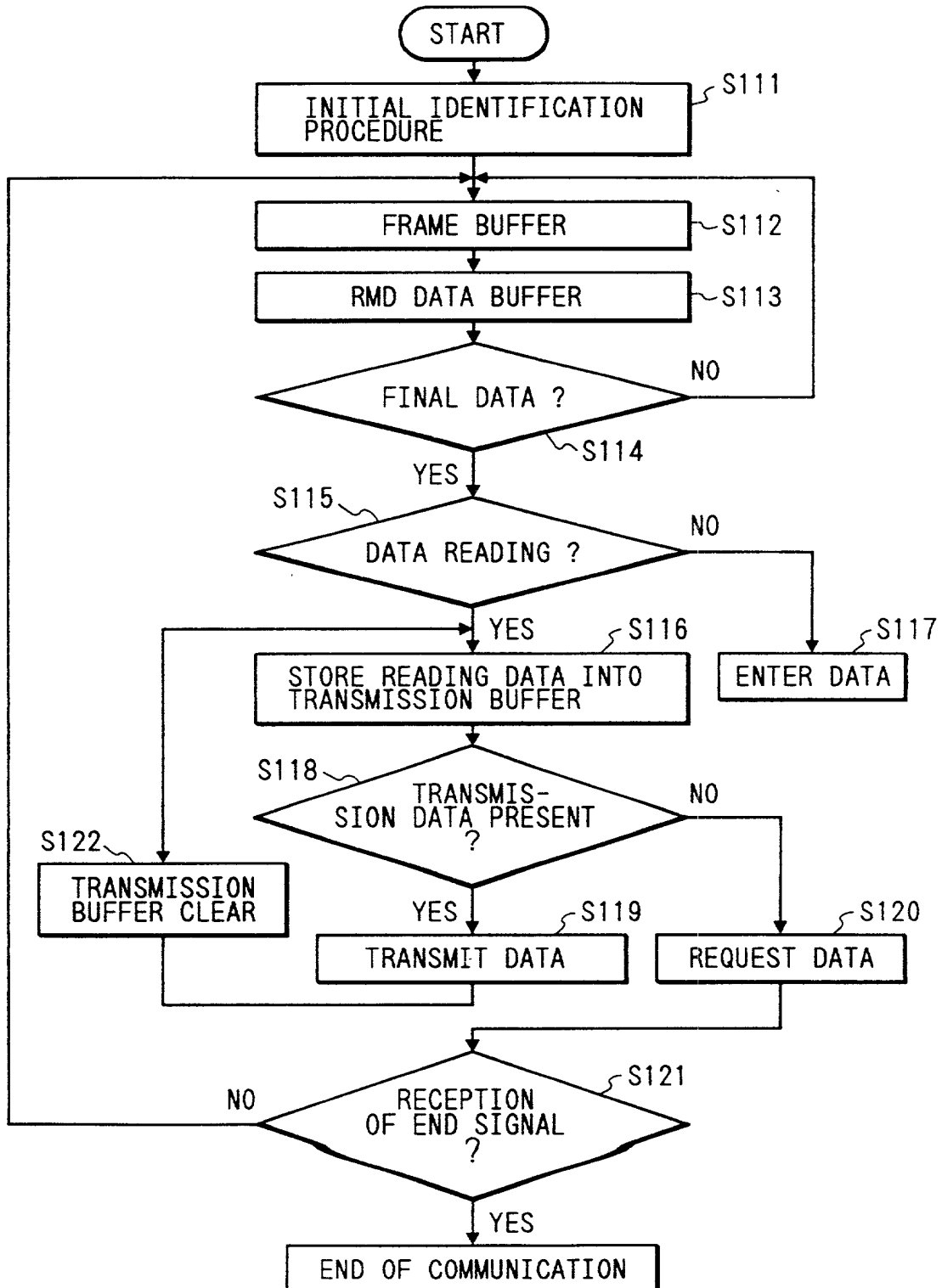


FIG. 27

| | |
|---|--------------|
| << REMOTE DIAGNOSTIC SYSTEM >> | [LEVEL 3] |
| [MEMORY CLEAR] | |
| >>MACHINE TYPE SELECTION | |
| CF-770 | |
| >>NUMBER OF CLEAR ITEMS | |
| TEL | |
| >>CONNECTION NUMBER INPUT (50 FIGURES) | |
| >>EXECUTION | |
| CLEAR ITEM | |
| TEL USER DATA SERVICE SW NCU SERVICE DAT REPORT ALL | |
| OPERATION CONTENTS : DIALING | |
| F2:PREVIOUS ITEM | F3:NEXT ITEM |
| F5:DATA DELETION | F6:RESTART |

FIG. 28

<< REMOTE DIAGNOSTIC SYSTEM >>

[DATA TRANSMISSION]

USER TEL No. _____

USER ABBREVIATION _____

>>DATA SELECTION
ALL DATA

>>CONNECTION NUMBER INPUT _____

>>EXECUTION

OPERATION CONTENTS : **DIALING**

F1: BREAK

FIG. 29

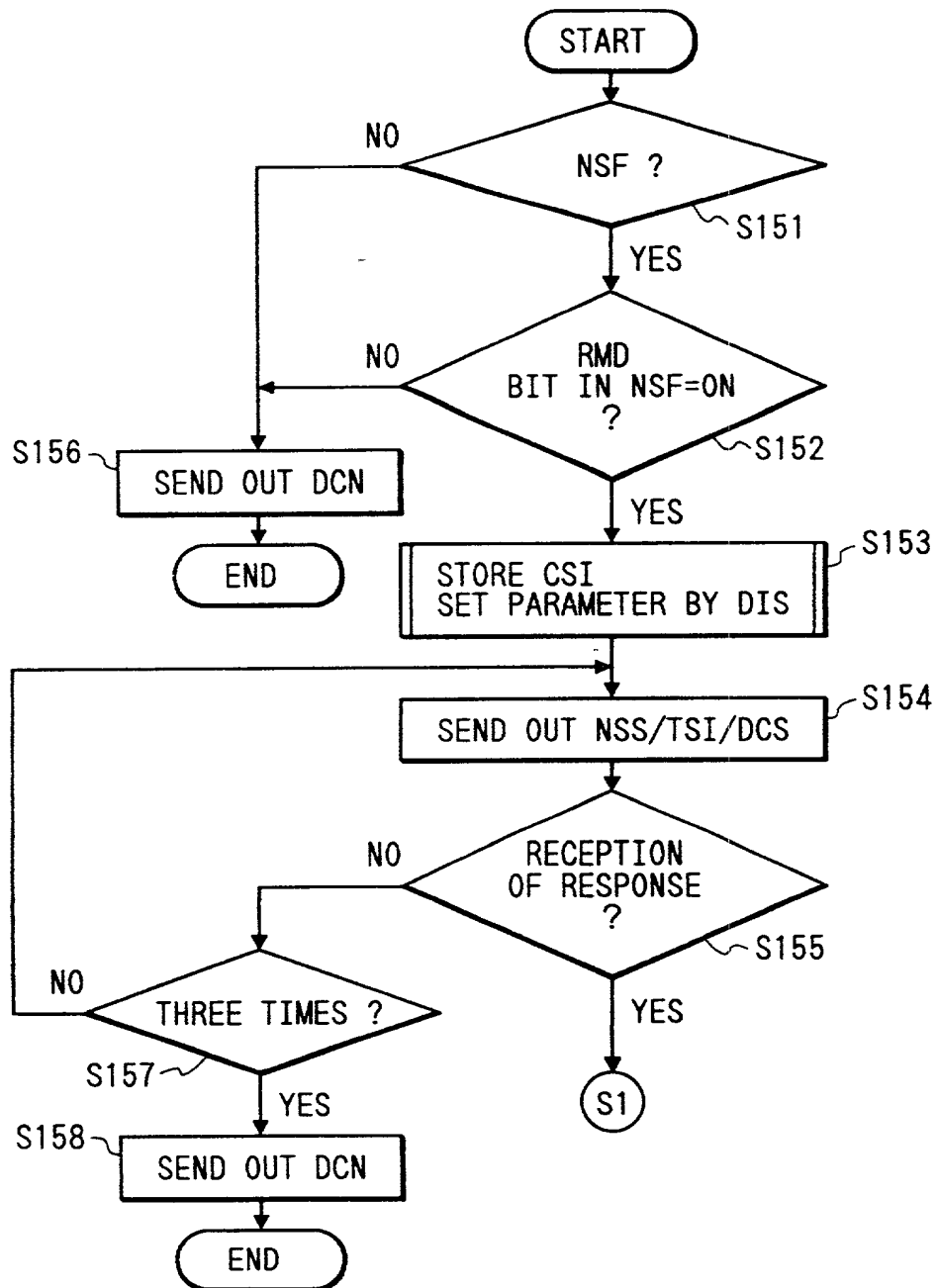
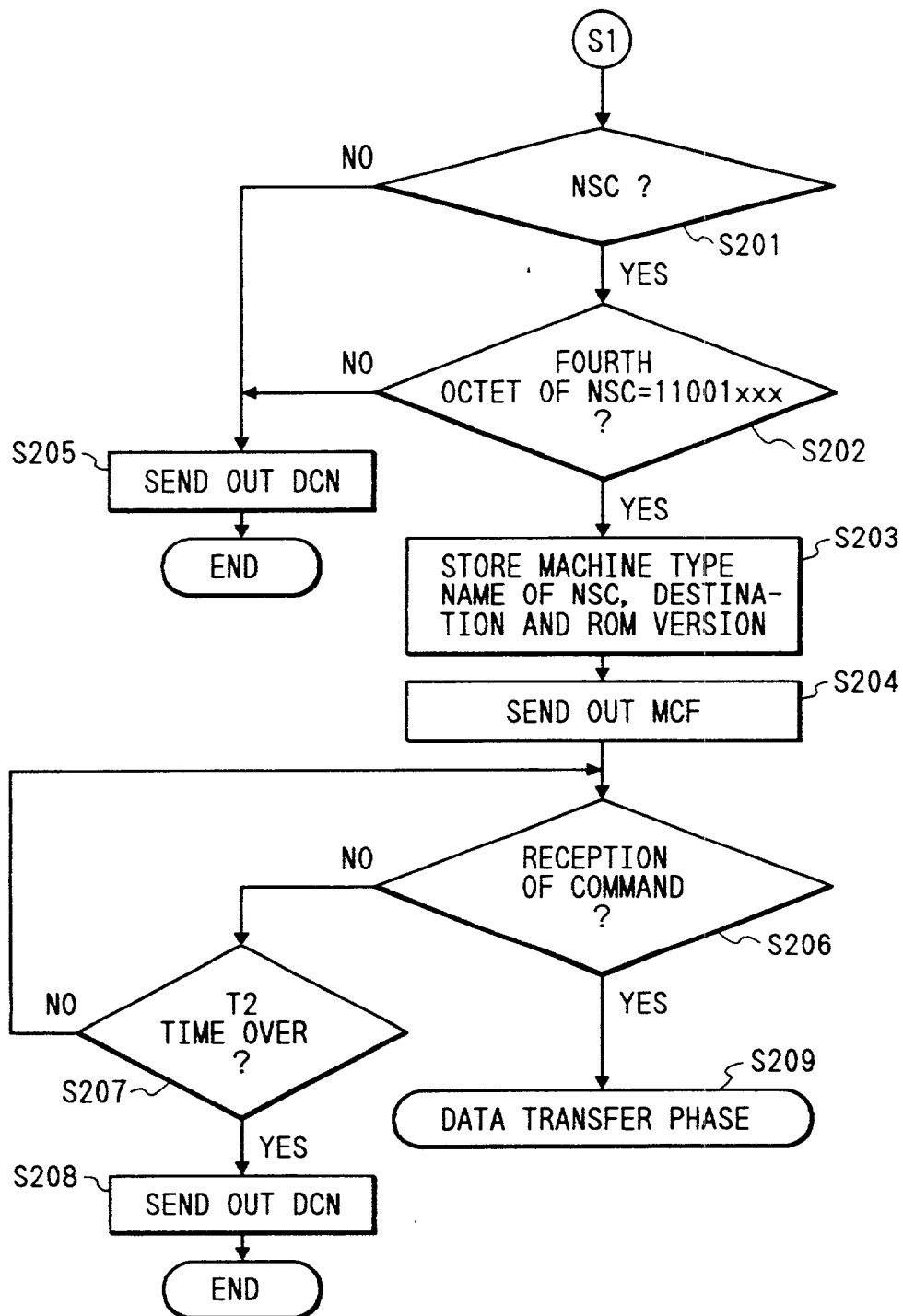


FIG. 30



66020 8024320

FIG. 31

| |
|----------|
| FIG. 31A |
| FIG. 31B |

FIG. 31A

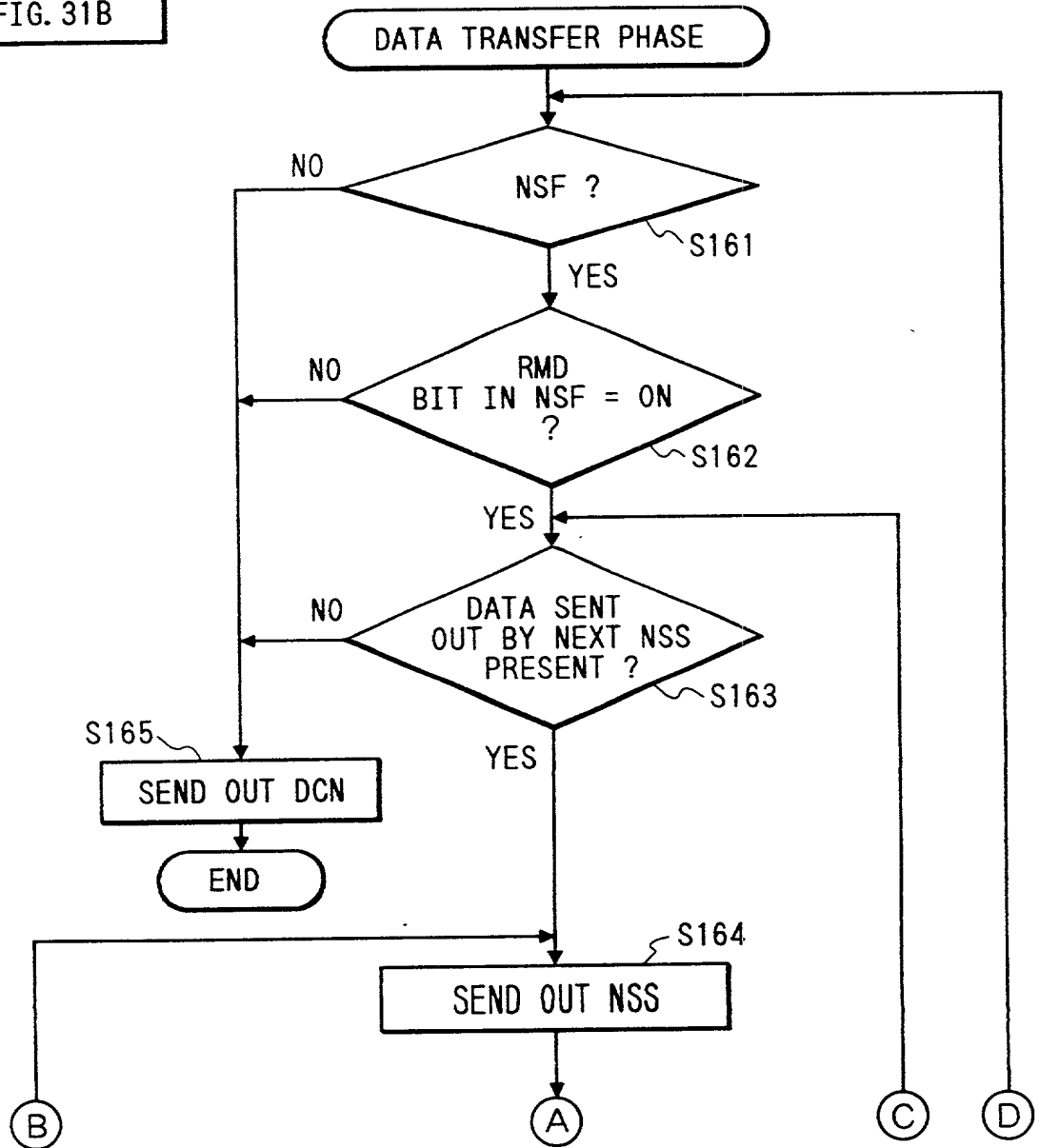


FIG. 31B

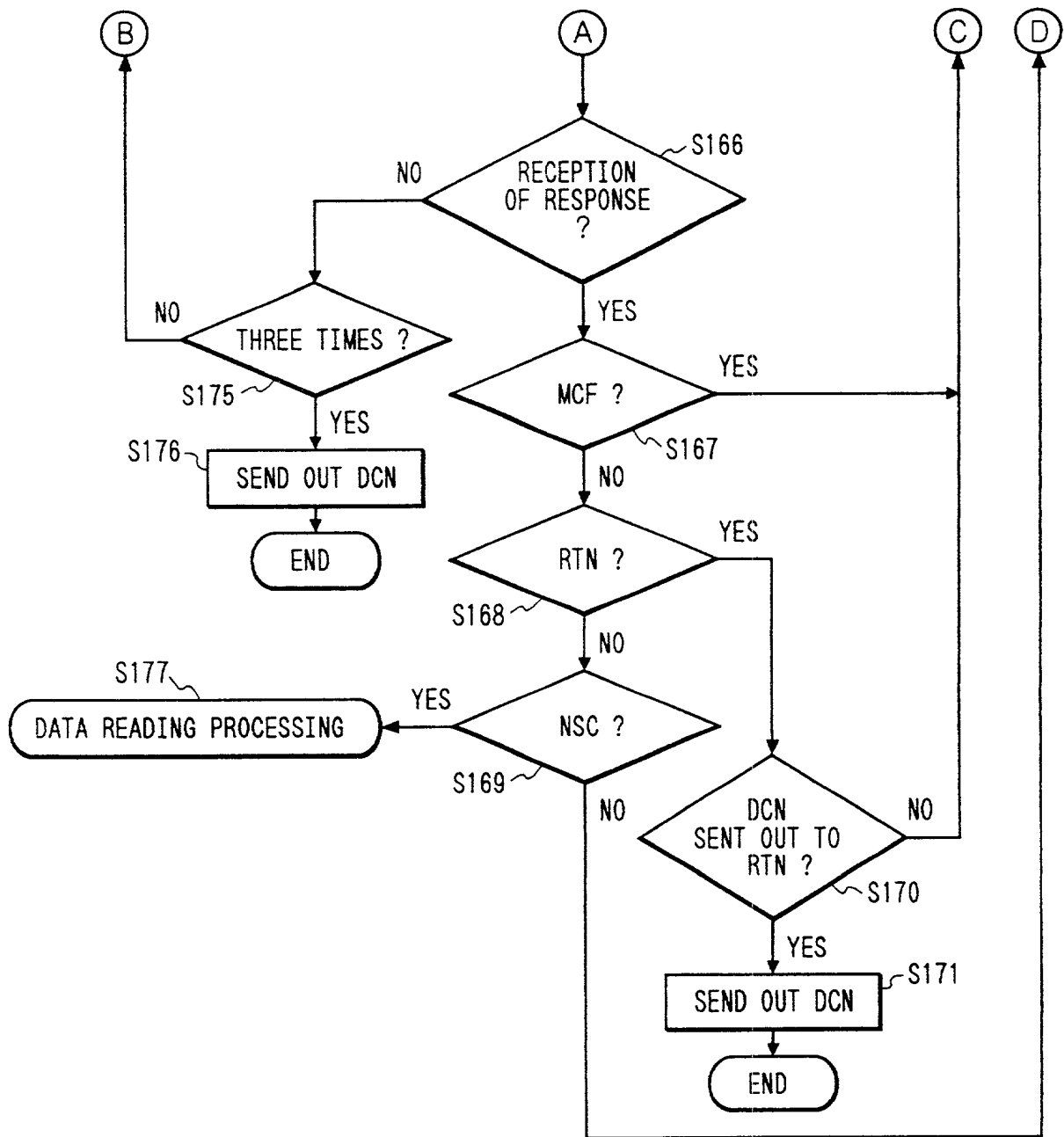
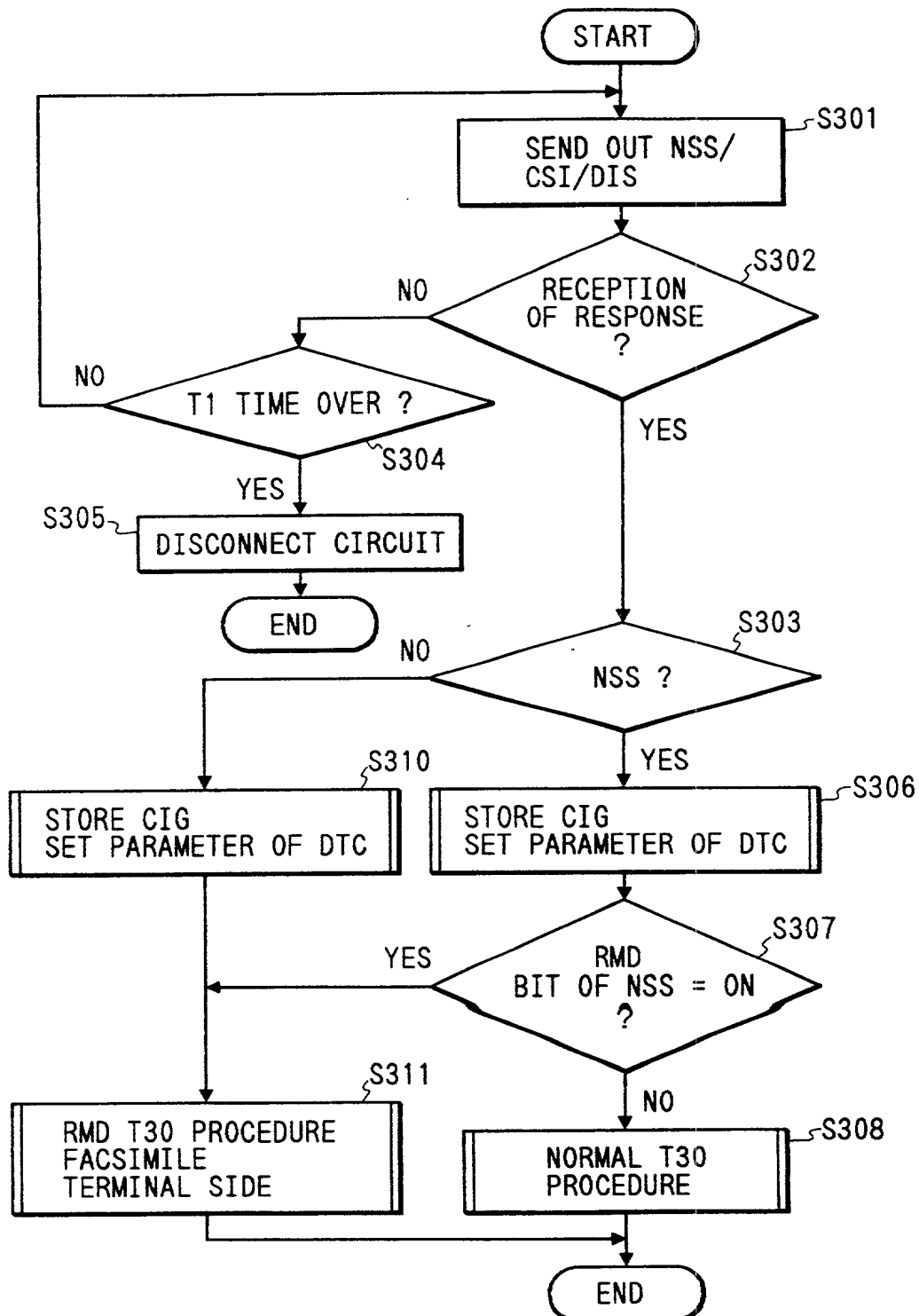
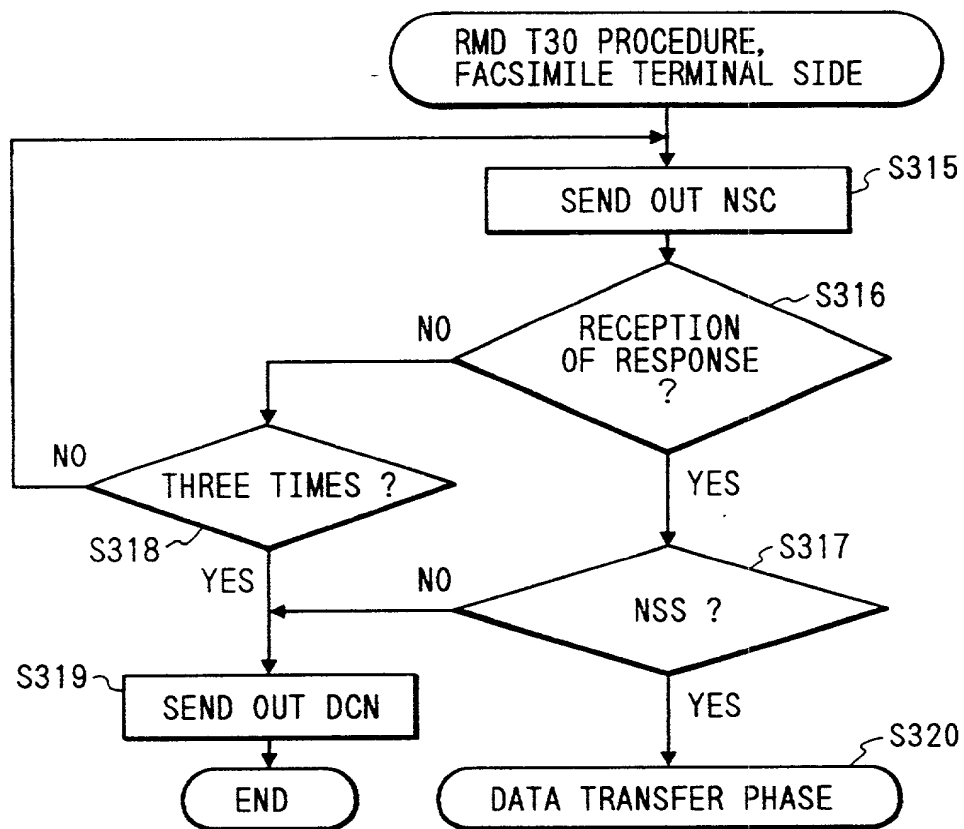


FIG. 33



660600" 80449260

FIG. 34



66060 80849260

FIG. 35

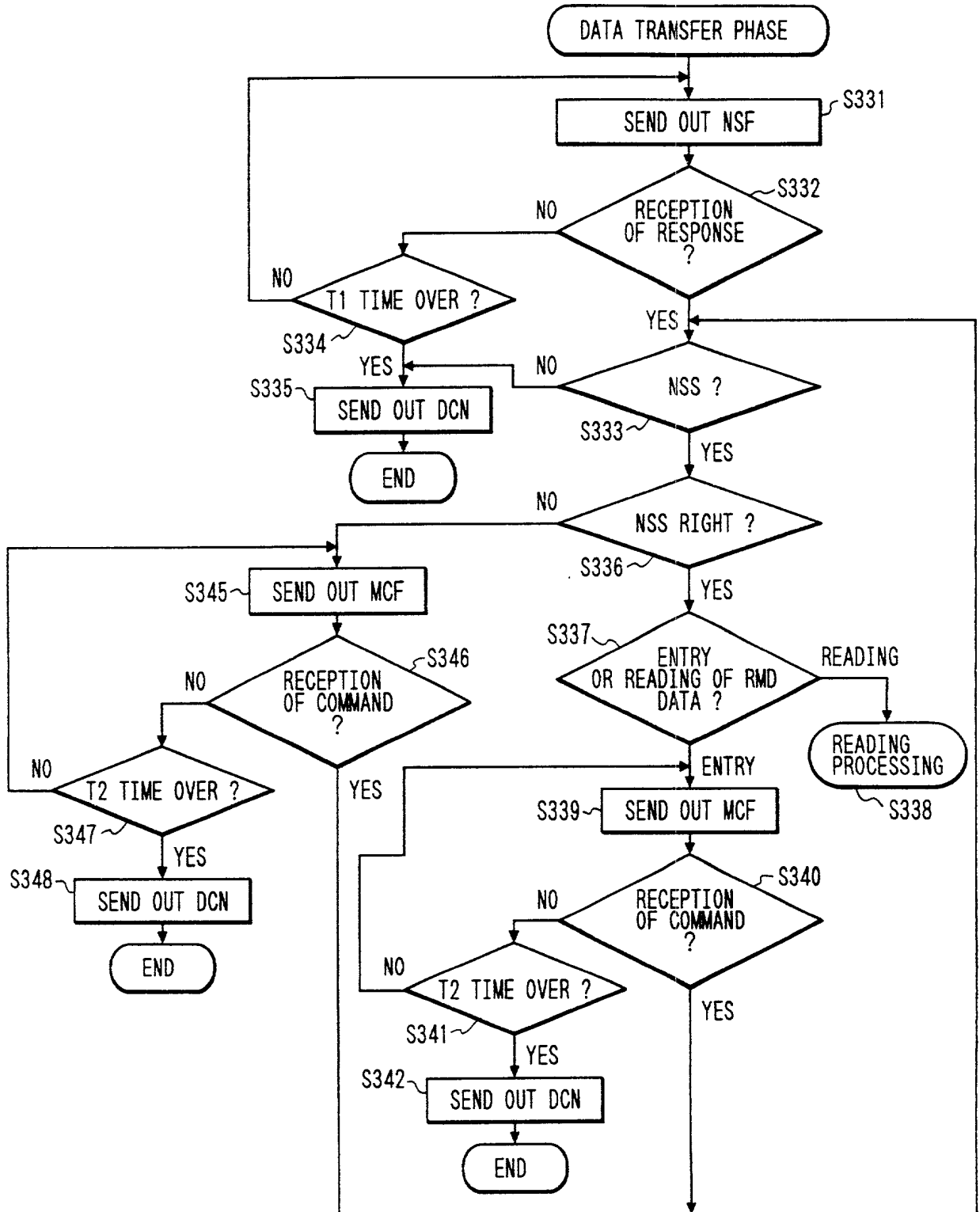


FIG. 36

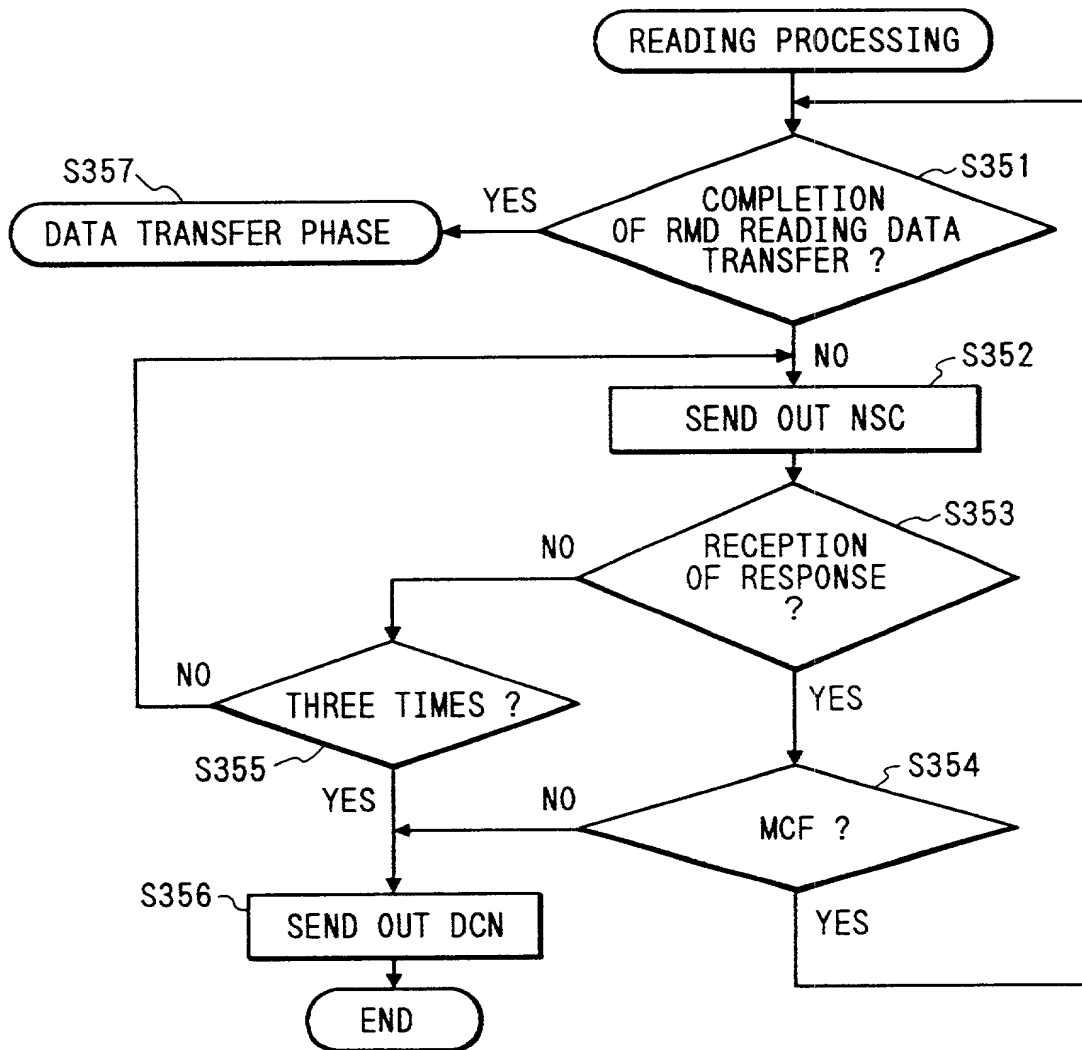


FIG. 37

| |
|----------|
| FIG. 37A |
| FIG. 37B |

FIG. 37A

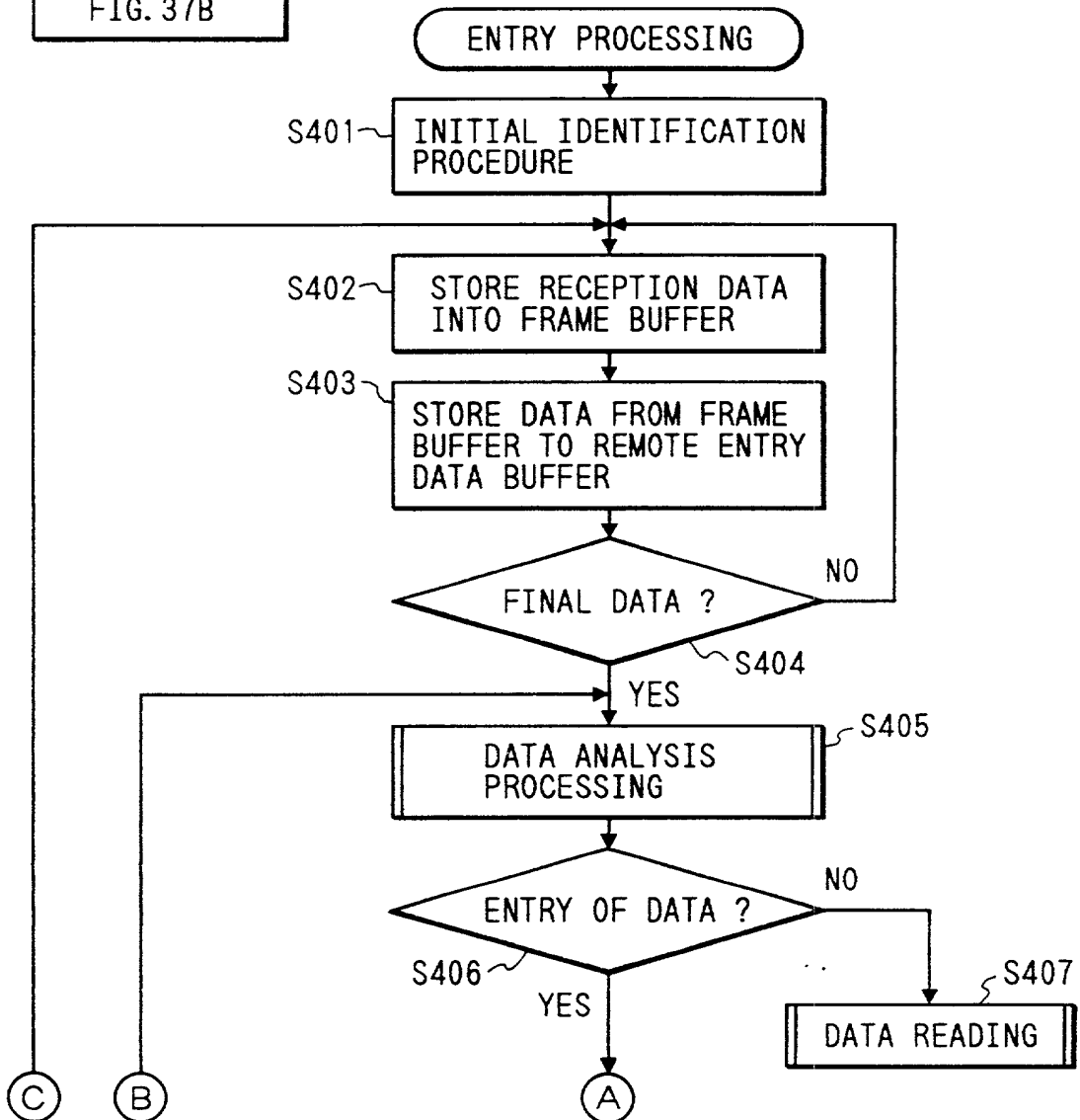


FIG. 37B

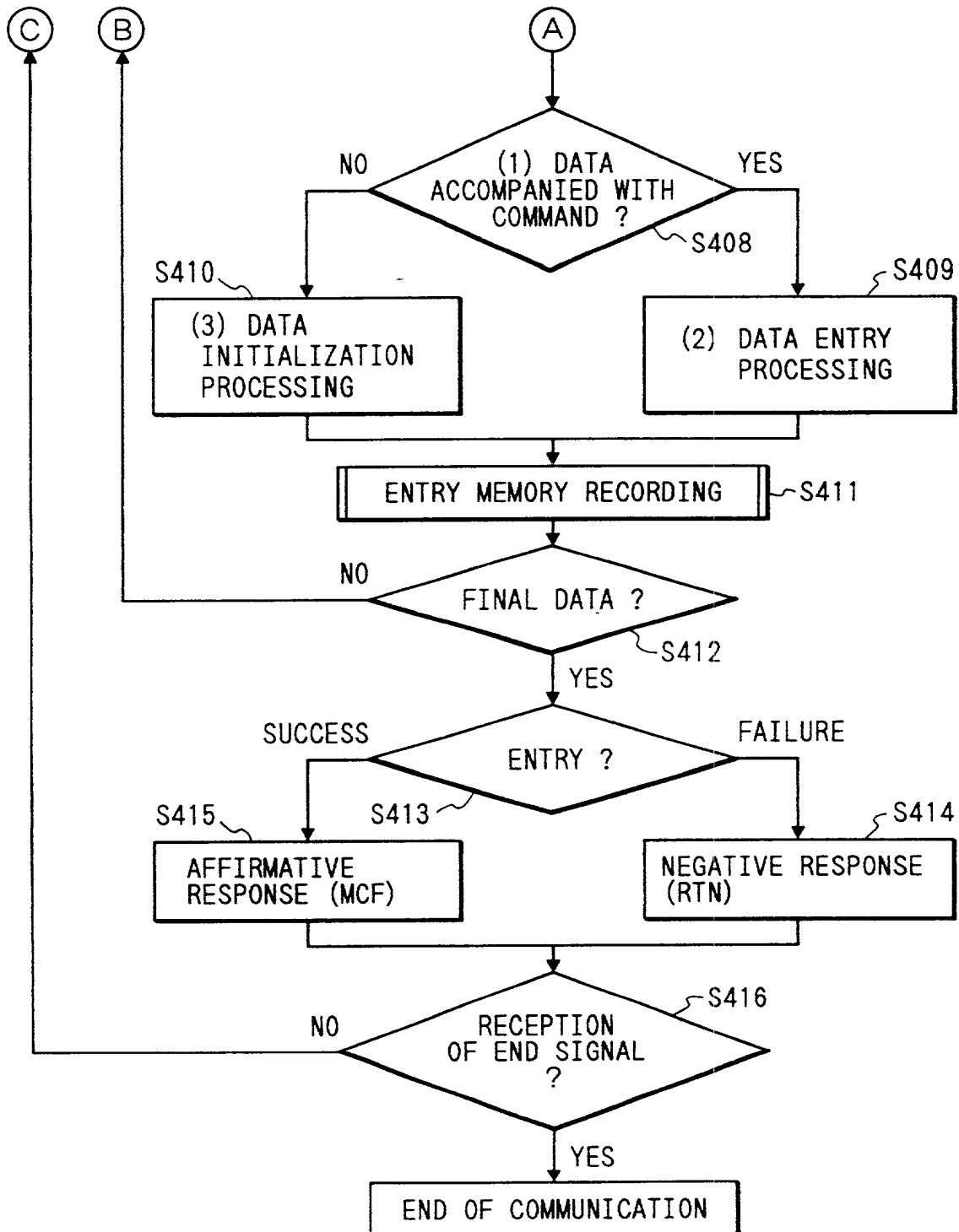
[illegible]

FIG. 39

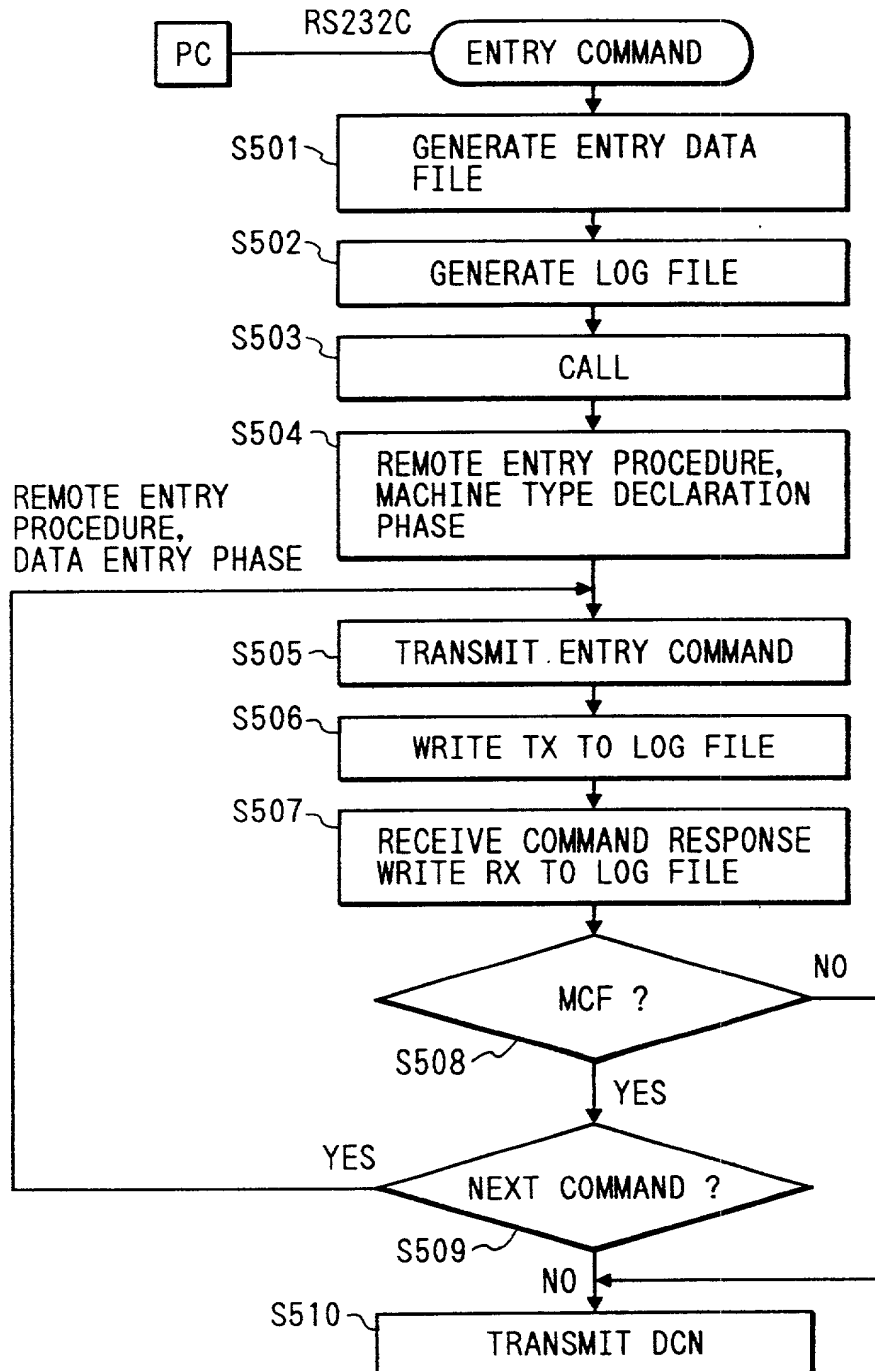


FIG. 40

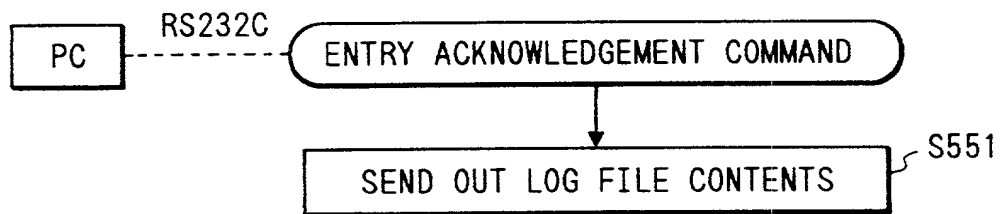


FIG. 41

| << REMOTE DIAGNOSTIC SYSTEM >> | | | |
|--------------------------------|----------|------|------|
| >> ONE-TOUCH/SHORTENED NUMBER | | | 3 |
| >> DESTINATION CODE | 03 | 4567 | 8901 |
| >> DESTINATION ABBREVIATION | ABC INC. | | |
| >> TRANSMISSION RATE | HIGH | | |
| >> OVERSEAS TRANSMISSION | 0 | | |

FIG. 42A

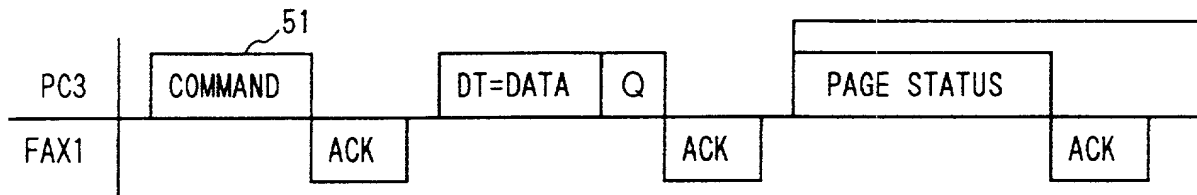


FIG. 42B

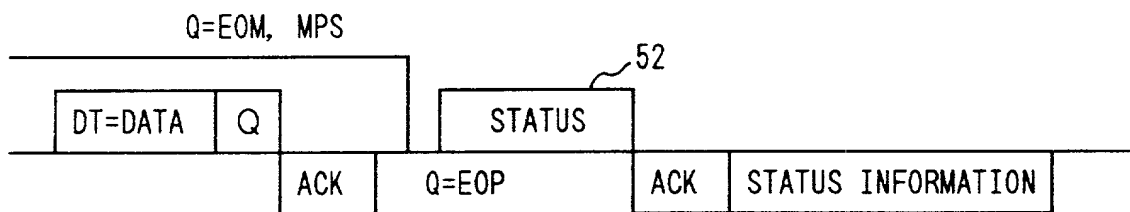


FIG. 42C

FILE WRITE COMMAND FORMAT

CC=010704/CD=00/IM=[00]/PW=[05]//

CD: DATA CODE

IM: LINE DENSITY

PW: RECORDING WIDTH

FIG. 42D

STATUS COMMAND FORMAT

CC=020000/ST=03 [/FN=nn]//

ST: FAX END STATUS

FN: FILE No.

FIG. 43A

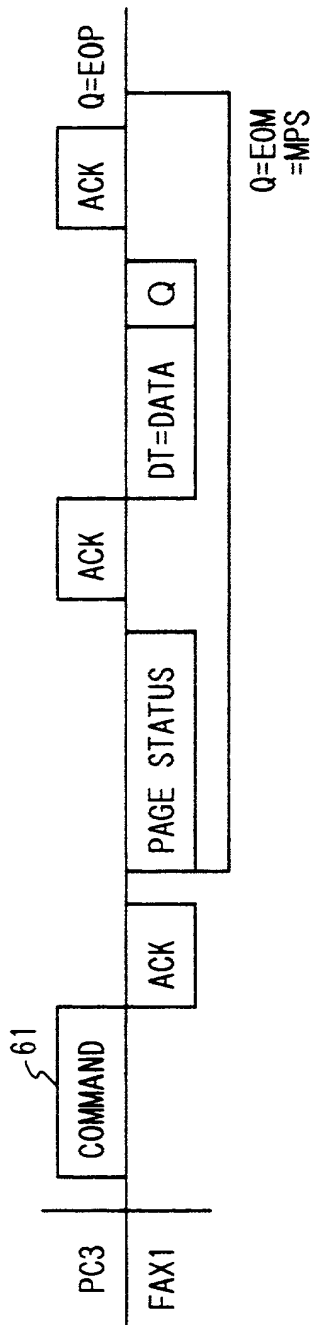


FIG. 43B

FILE READ COMMAND FORMAT

CC=010704/FN=nn /CD=01//
CD: DATA CODE
FN: FILE No.

FIG. 44

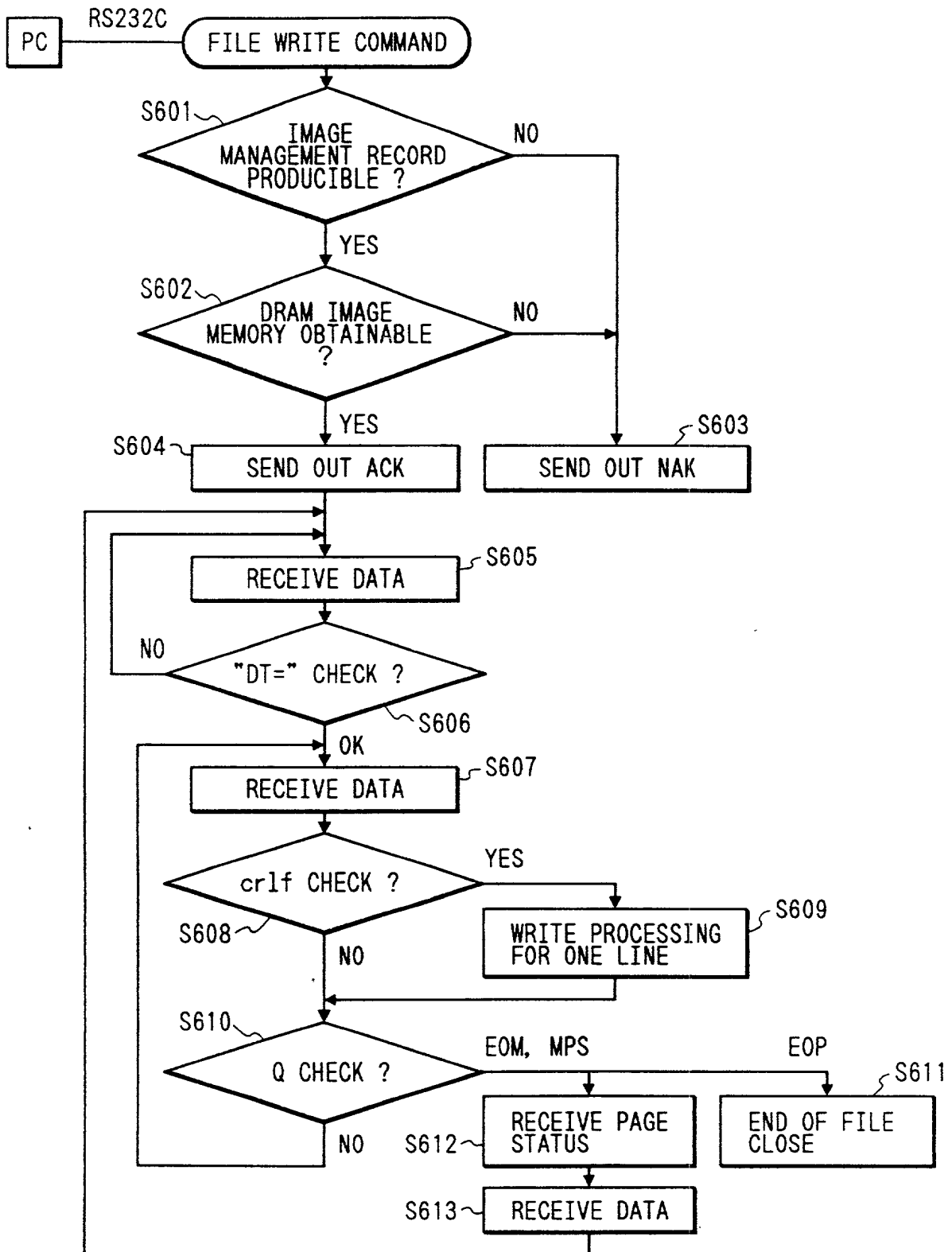


FIG. 45

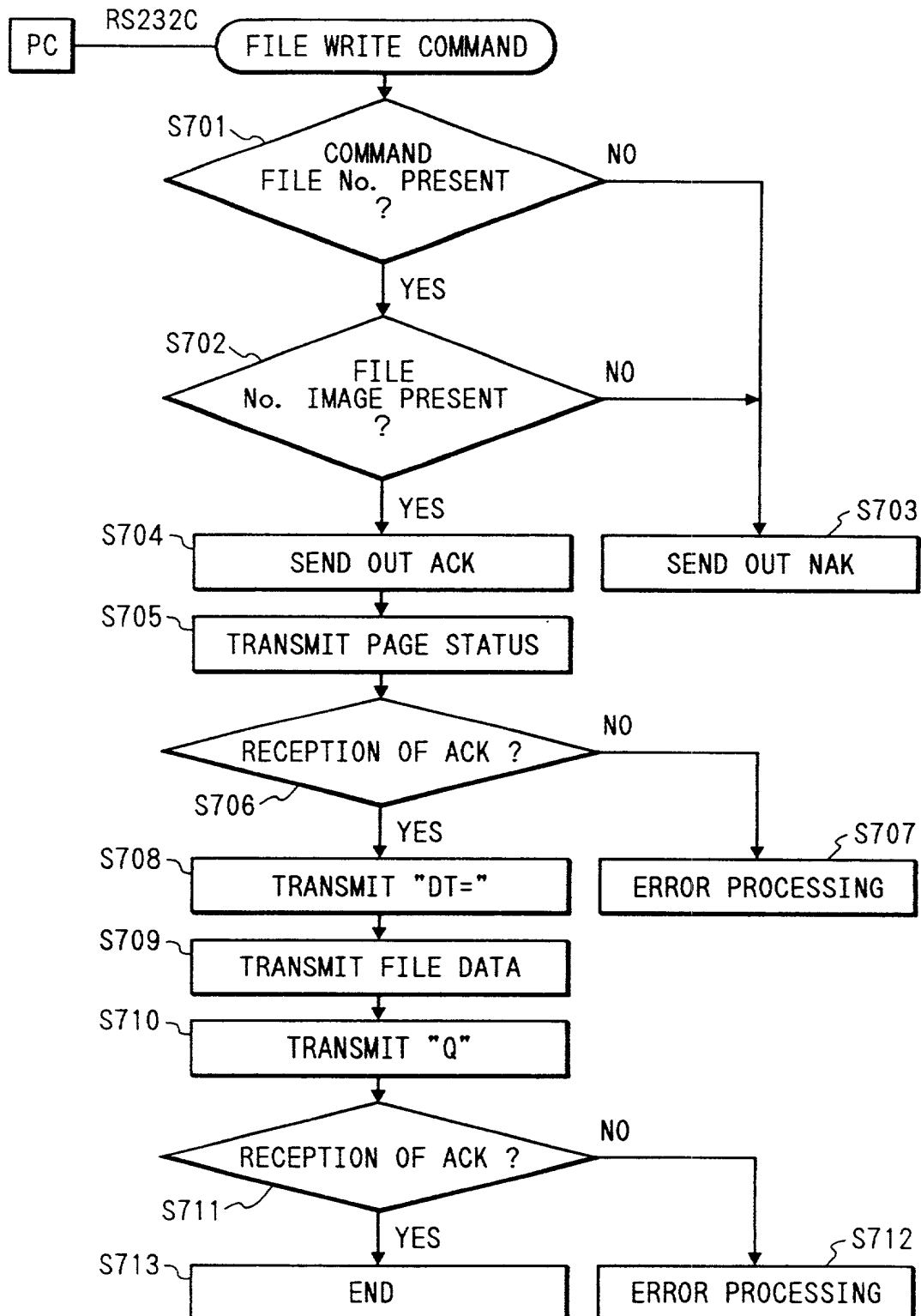


FIG. 46

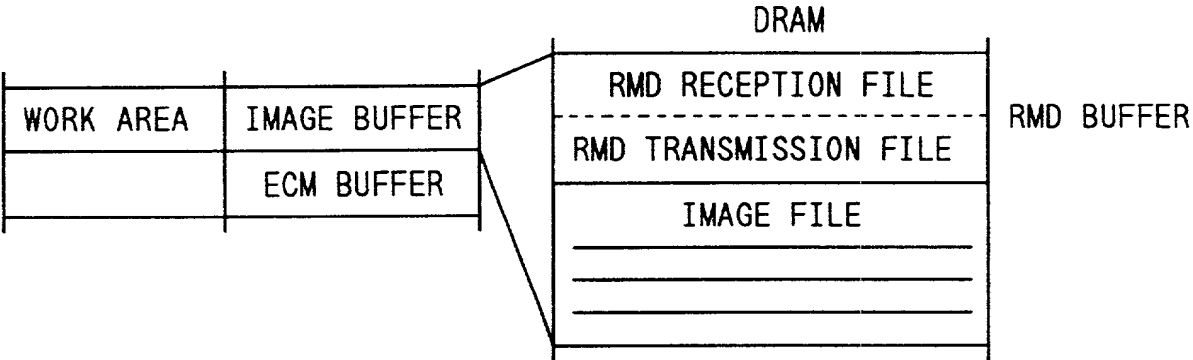


FIG. 47

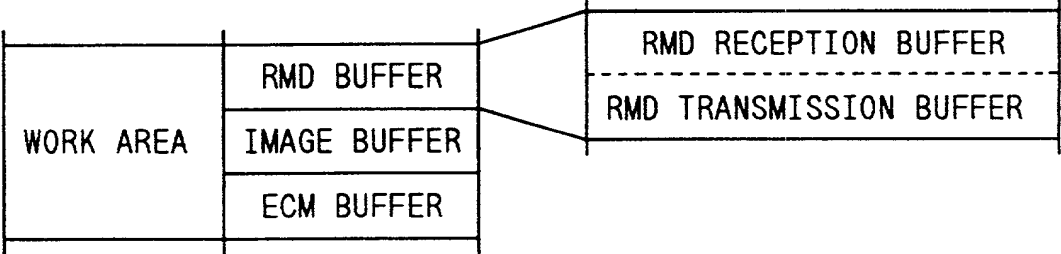


FIG. 48

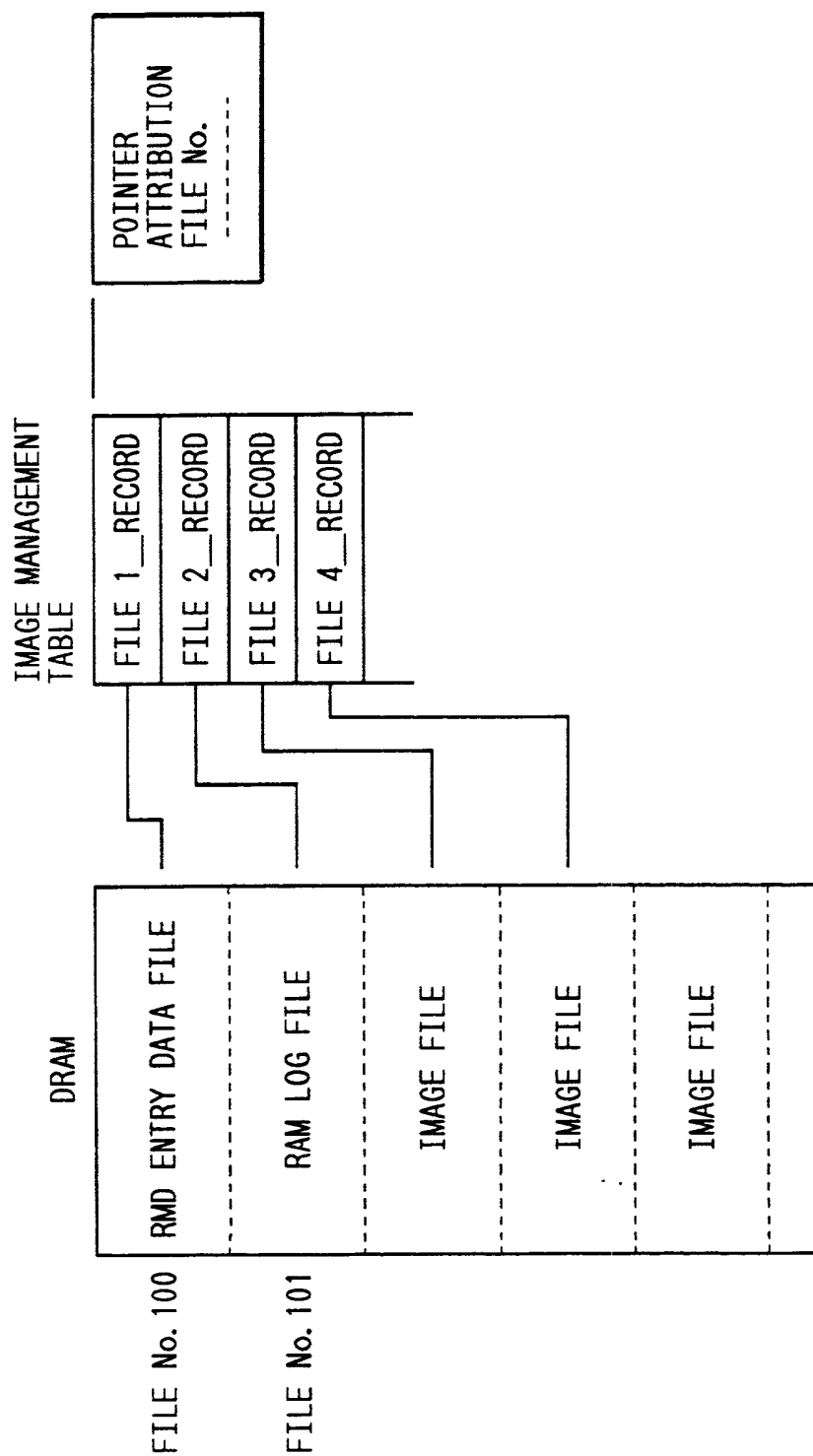


FIG. 49

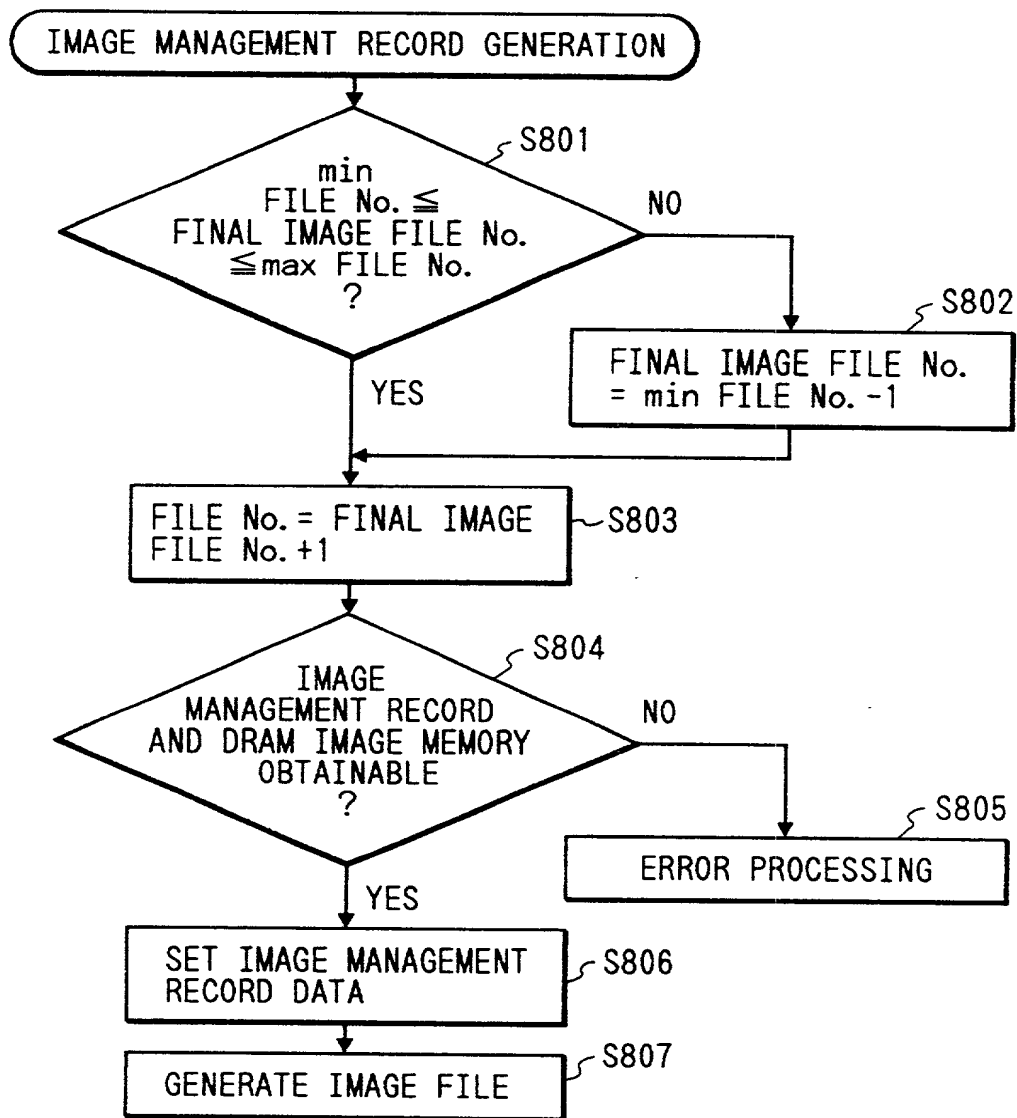


FIG. 50

TX : DI03

RX : MCF

TX : DT03 4567 8901

RX : MCF

TX : DNABC INC.

RX : MCF

TX : DS1

RX : MCF

LOG FILE 1

FIG. 51

TX : UN

RX : UNABC FAX

TX : MCF

RX : NSF

TX : UT

RX : UT03 4567 0123

TX : MCF

RX : NSF

LOG FILE 2

FIG. 52

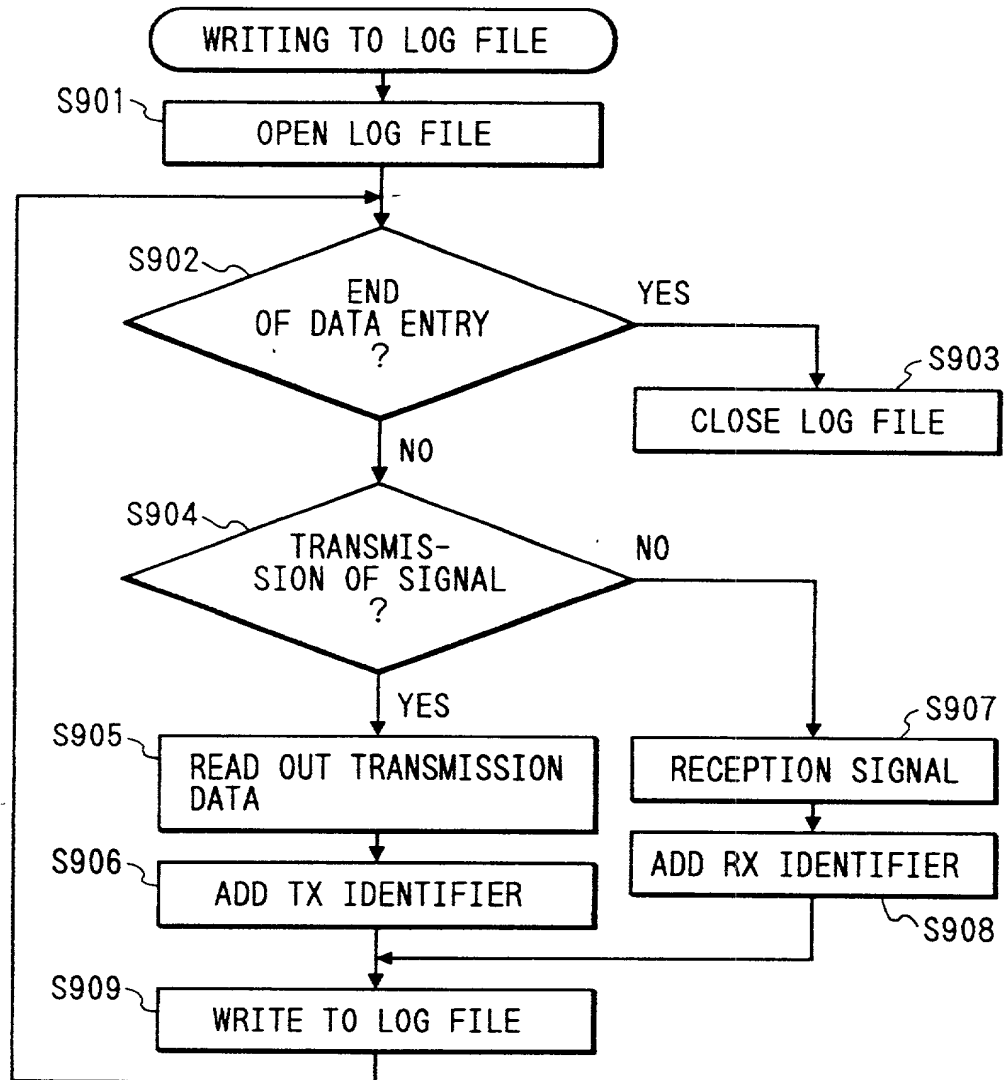


FIG. 53

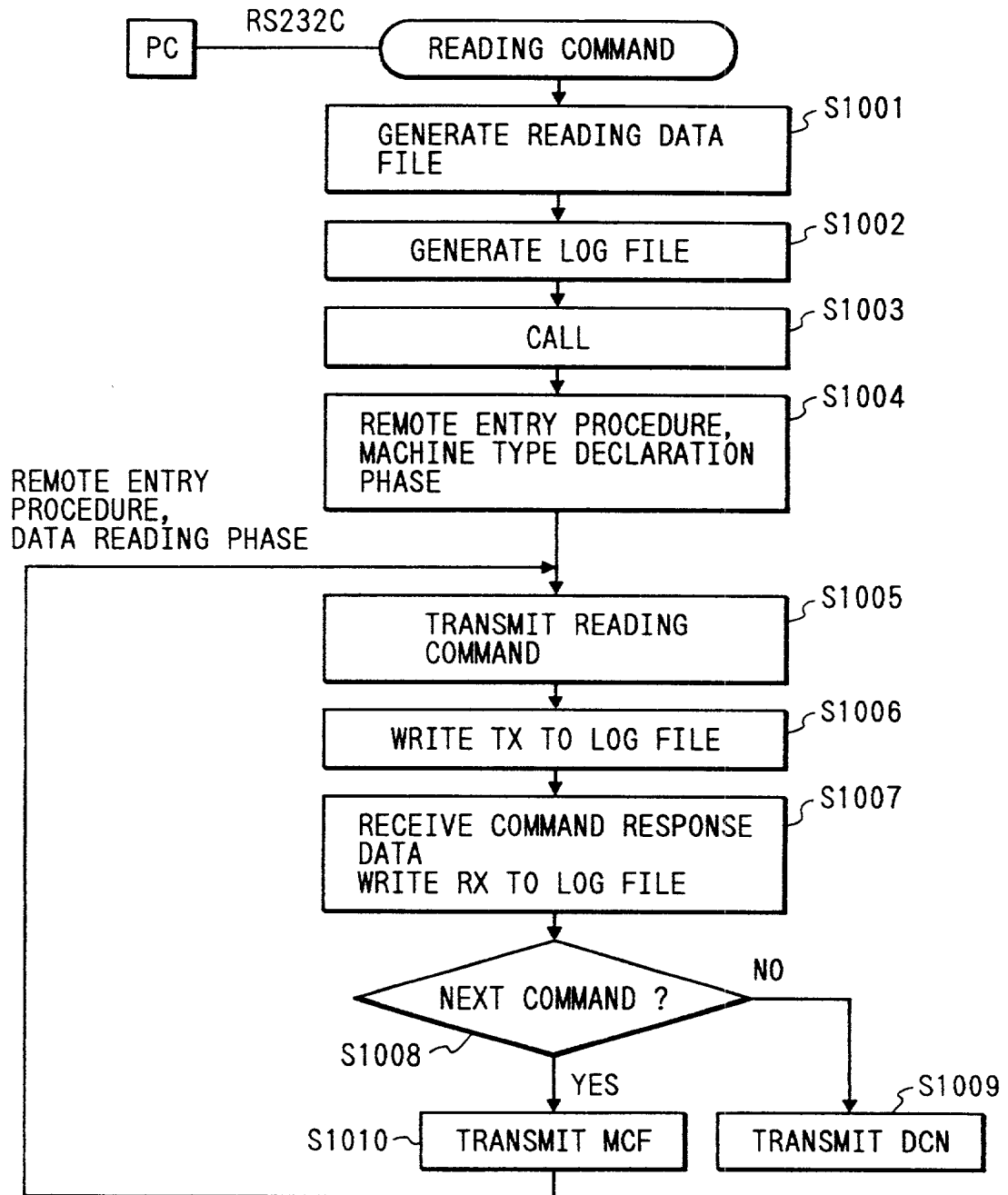


FIG. 54

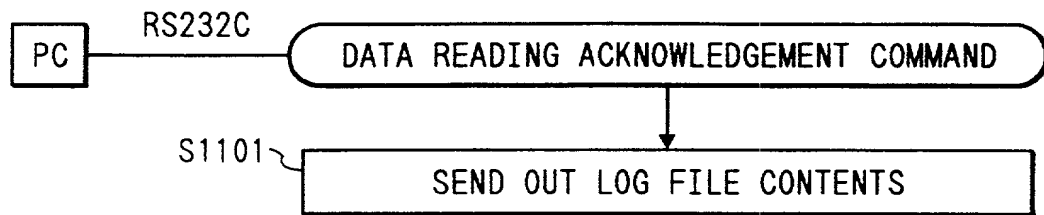


FIG. 59

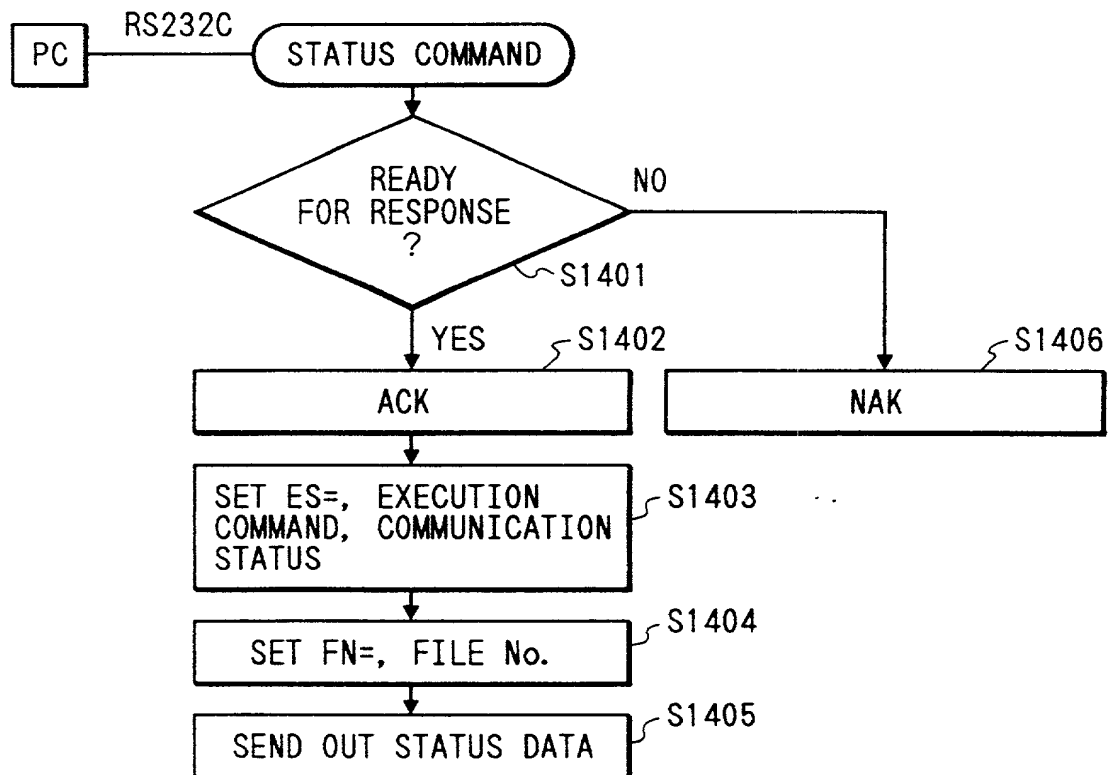


FIG. 55

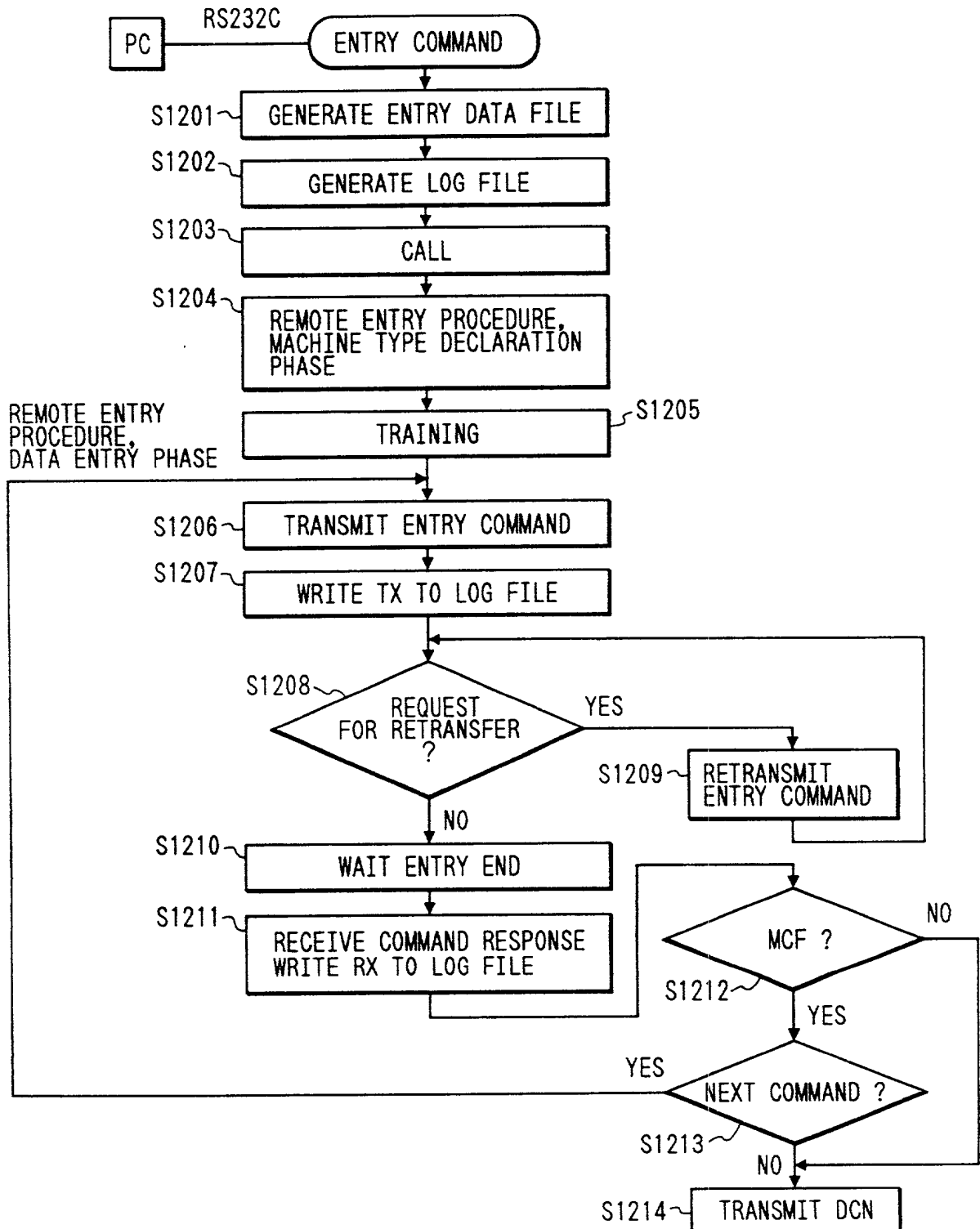


FIG. 56

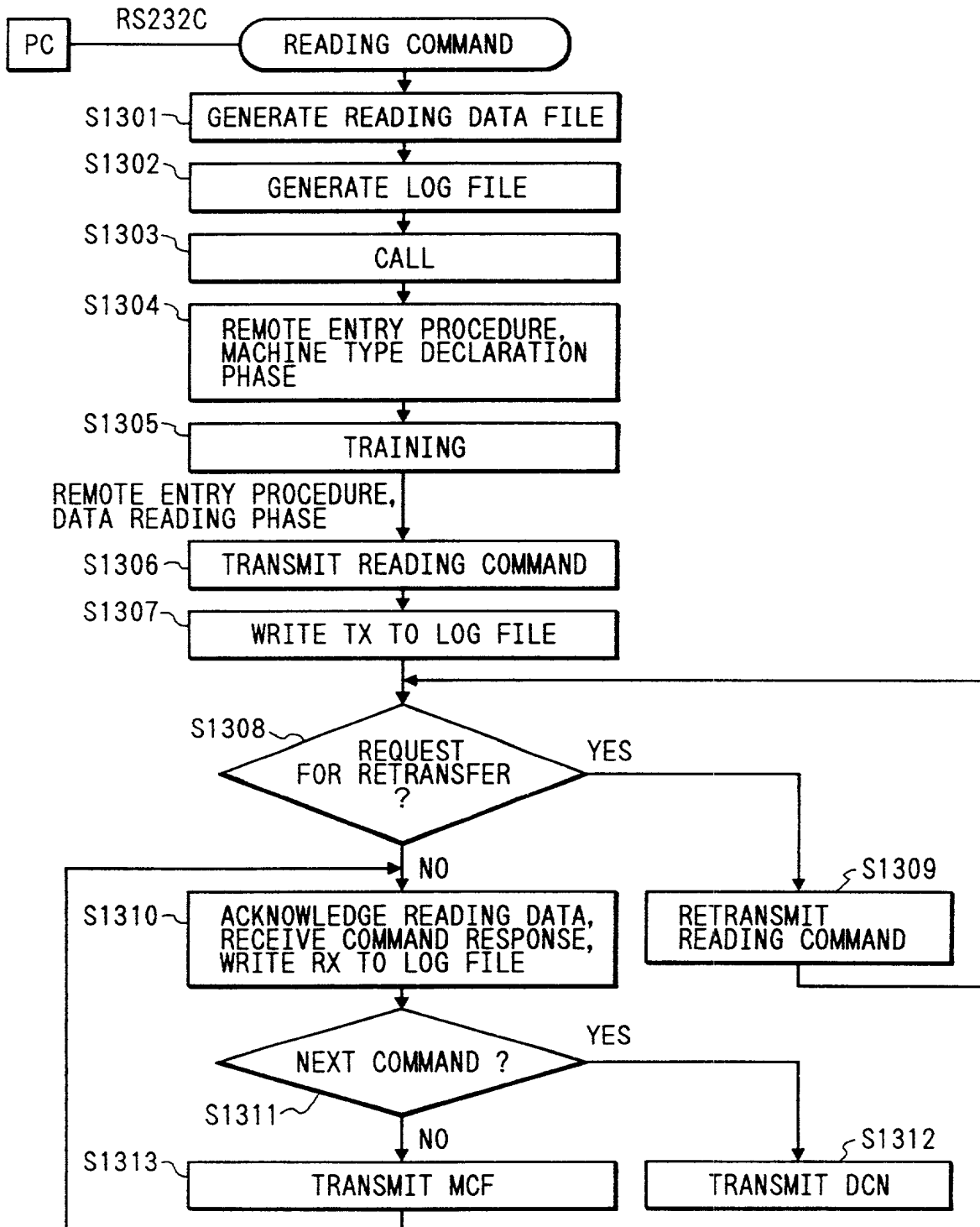


FIG. 57A

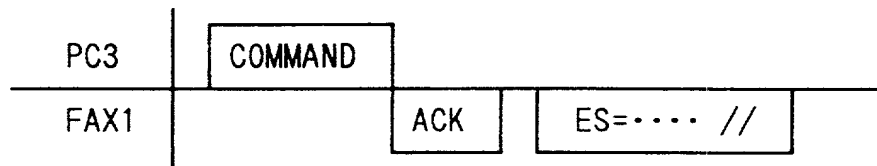


FIG. 57B

STATUS COMMAND FORMAT

CC=020000/ST=03 [/FN=nn] //
ST:FAX END STATUS
FN:FILE No.

FIG. 57C

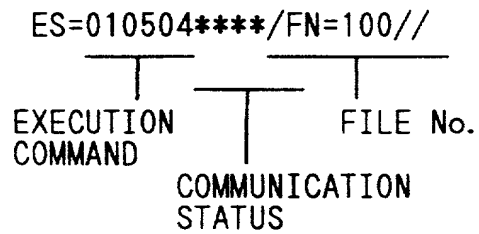


FIG. 58A

COMMUNICATION ADAPTER
FILE No. 100 UPON COMMUNICATION

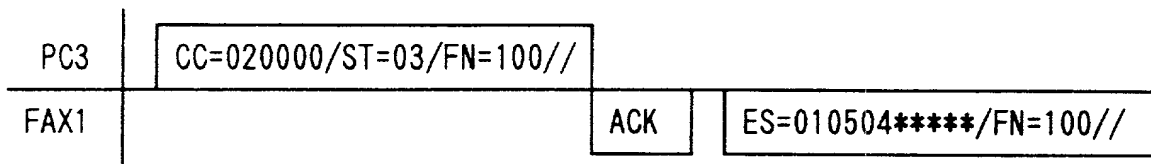


FIG. 58B

COMMUNICATION ADAPTER
FILE No. 100 END OF COMMUNICATION

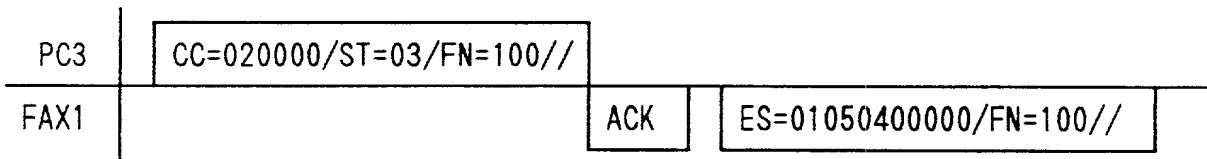


FIG. 58C

COMMUNICATION ADAPTER
FILE No. 100 COMMUNICATION ERROR (ERROR No. 123)

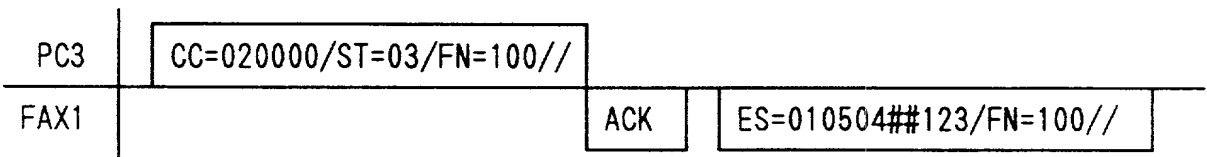


FIG. 60

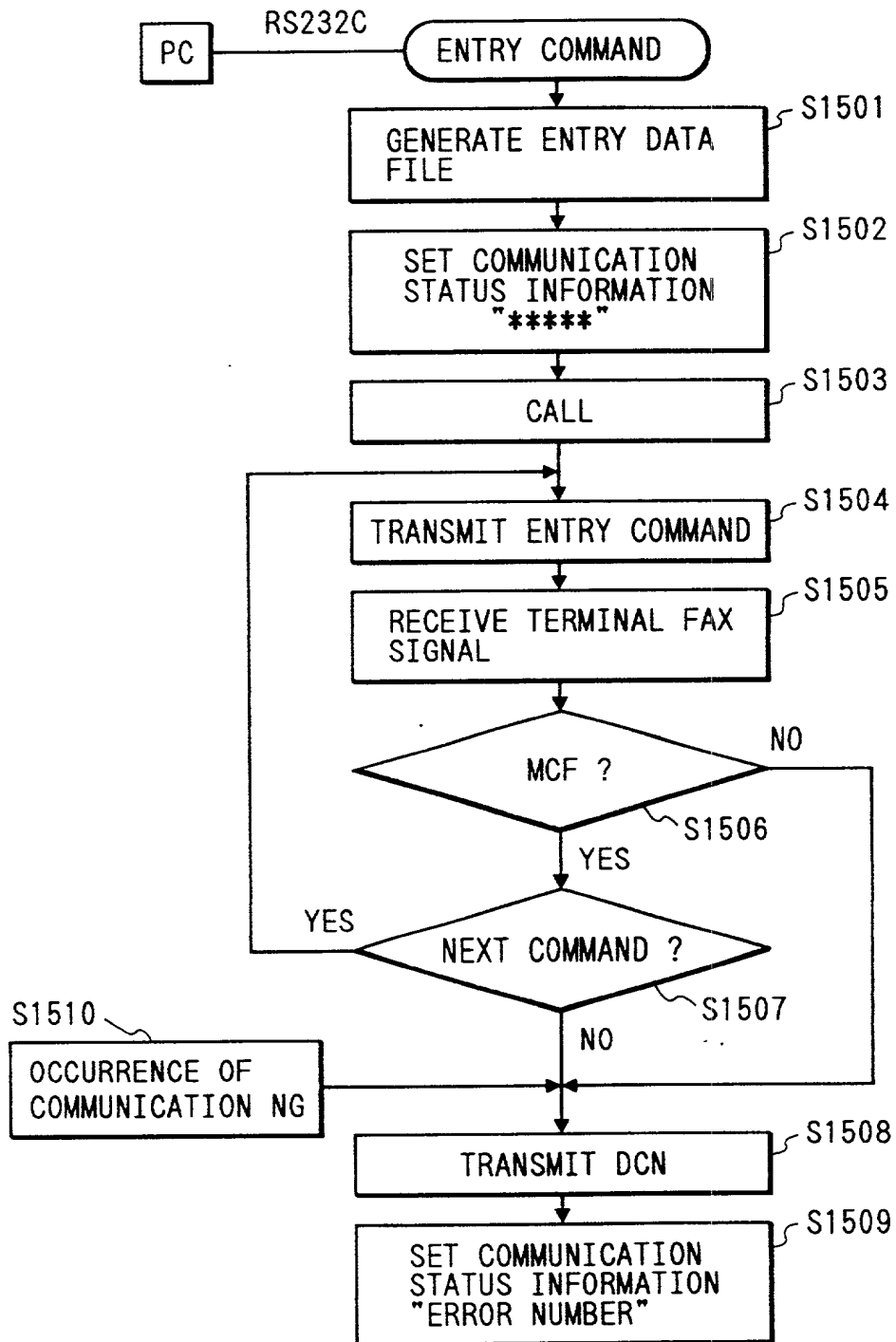


FIG. 61

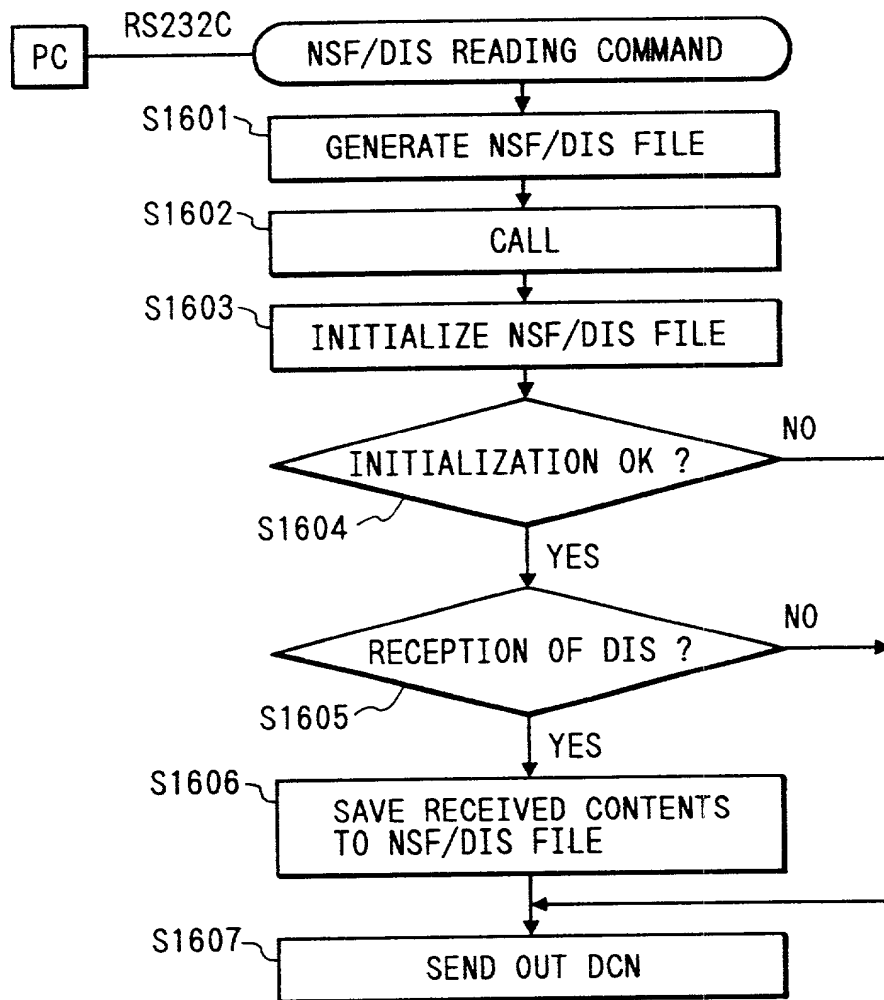


FIG. 62

<< REMOTE DIAGNOSTIC SYSTEM >>
[NSF/DIS READING]

>> CONNECTION NUMBER INPUT (20 FIGURES)

[DIS]

00-01-02-03-04-05-06-07-08-09

00 00 00 00 00 00 00 00 00 00

[NSF]

00-01-02-03-04-05-06-07-08-09

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00

>> EXECUTION

1. DESIGNATE OUTPUT SIDE

PRINTER

2. REMOTE MAINTENANCE MENU

OPERATION CONTENTS : TRANSMITTING

F1: BREAK F8: PRINT

FIG. 63

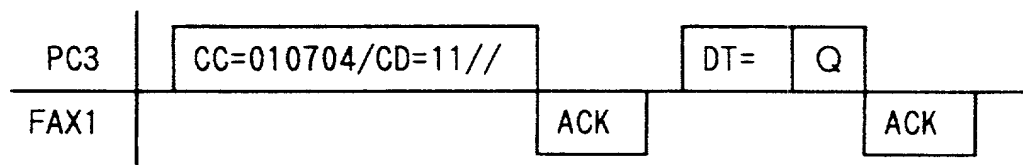


FIG. 64

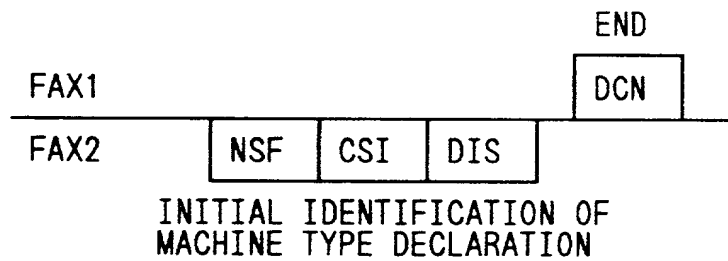


FIG. 65

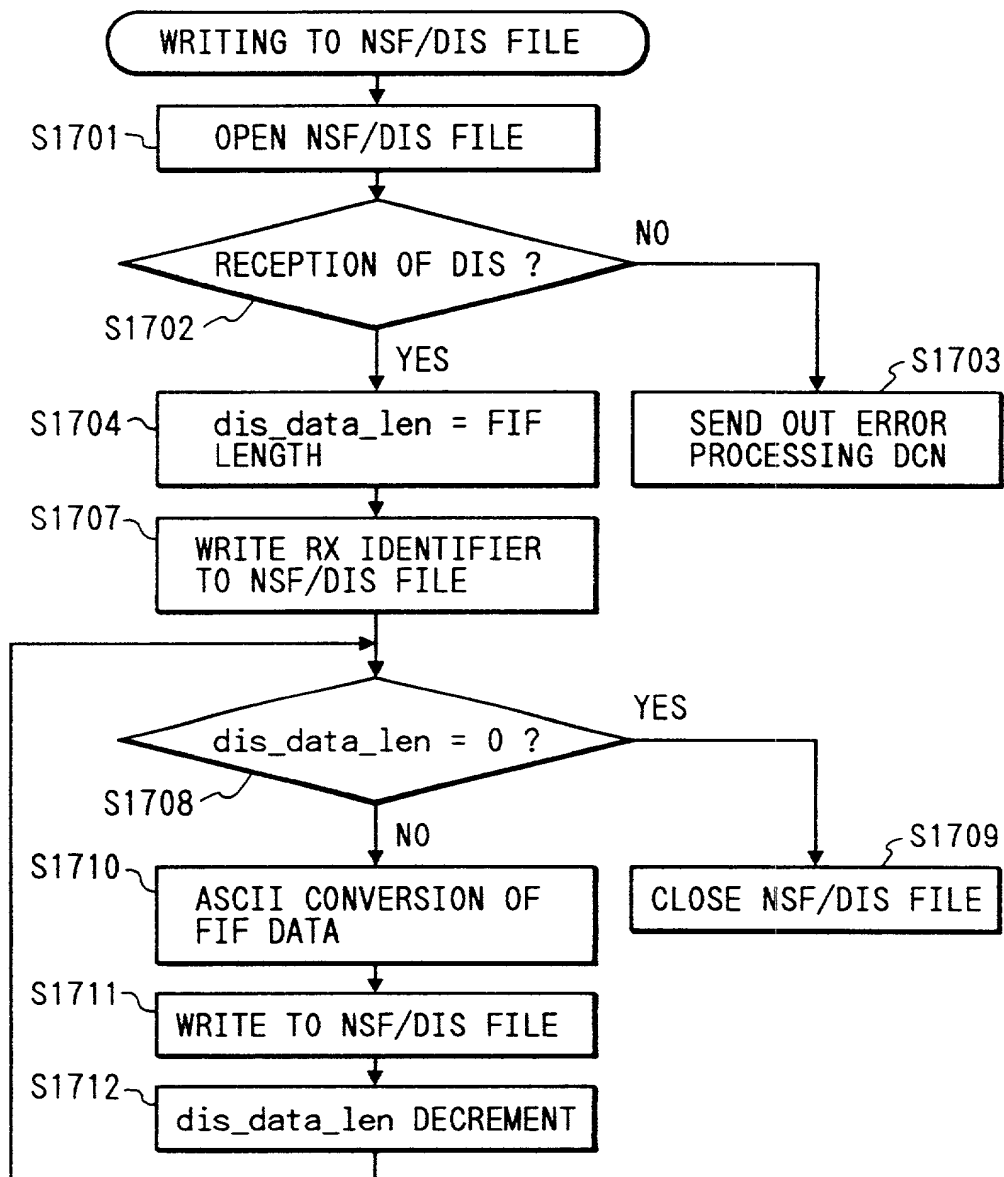


FIG. 66

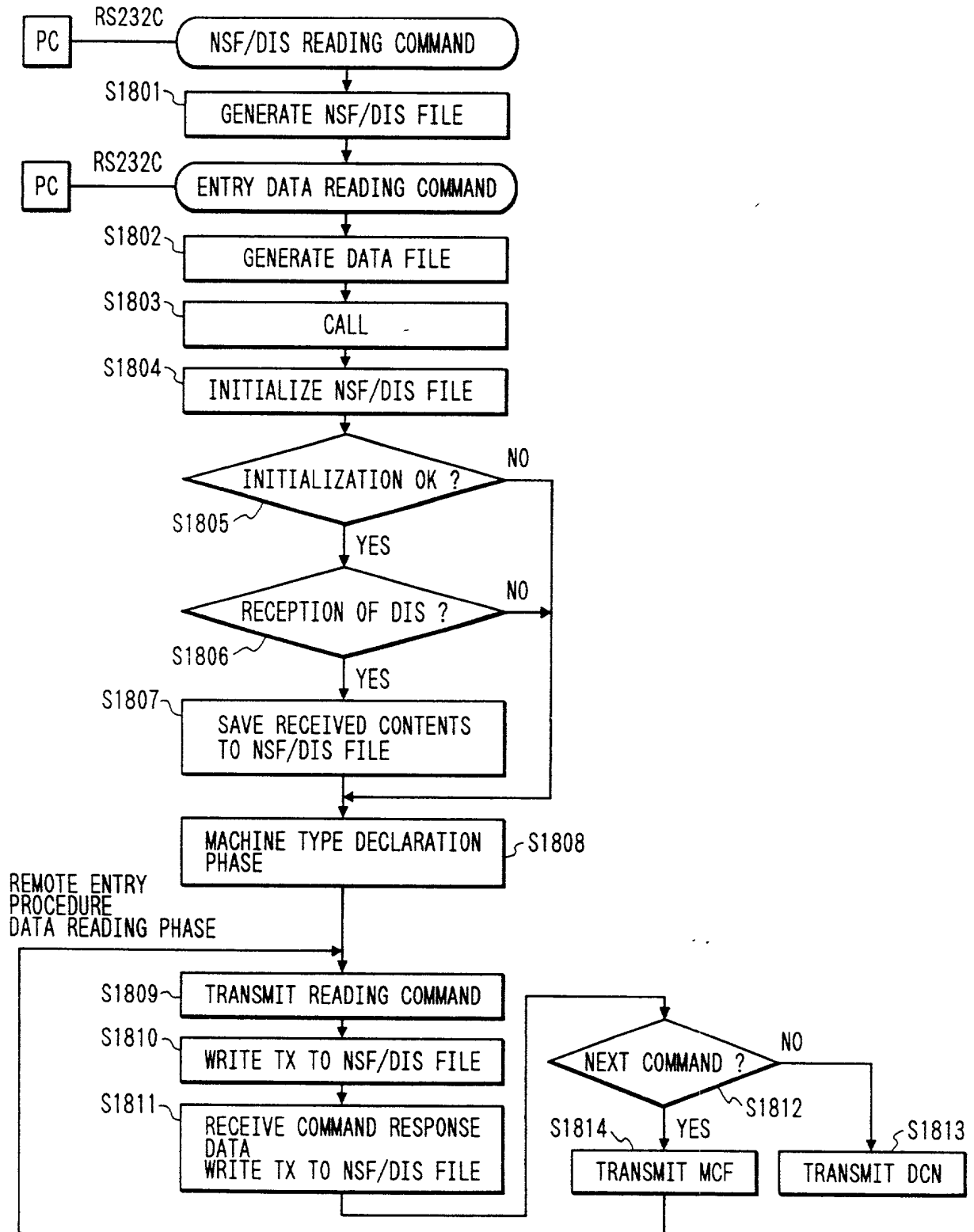


FIG. 67

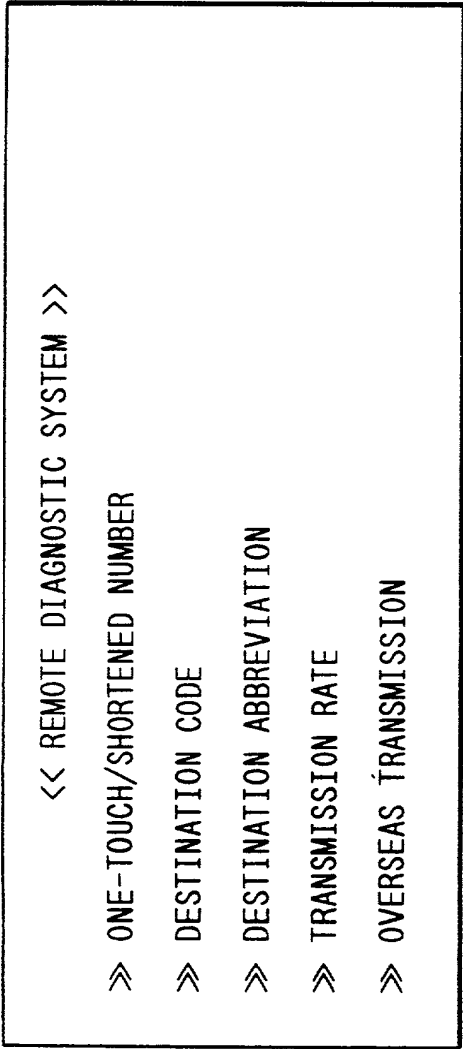


FIG. 68

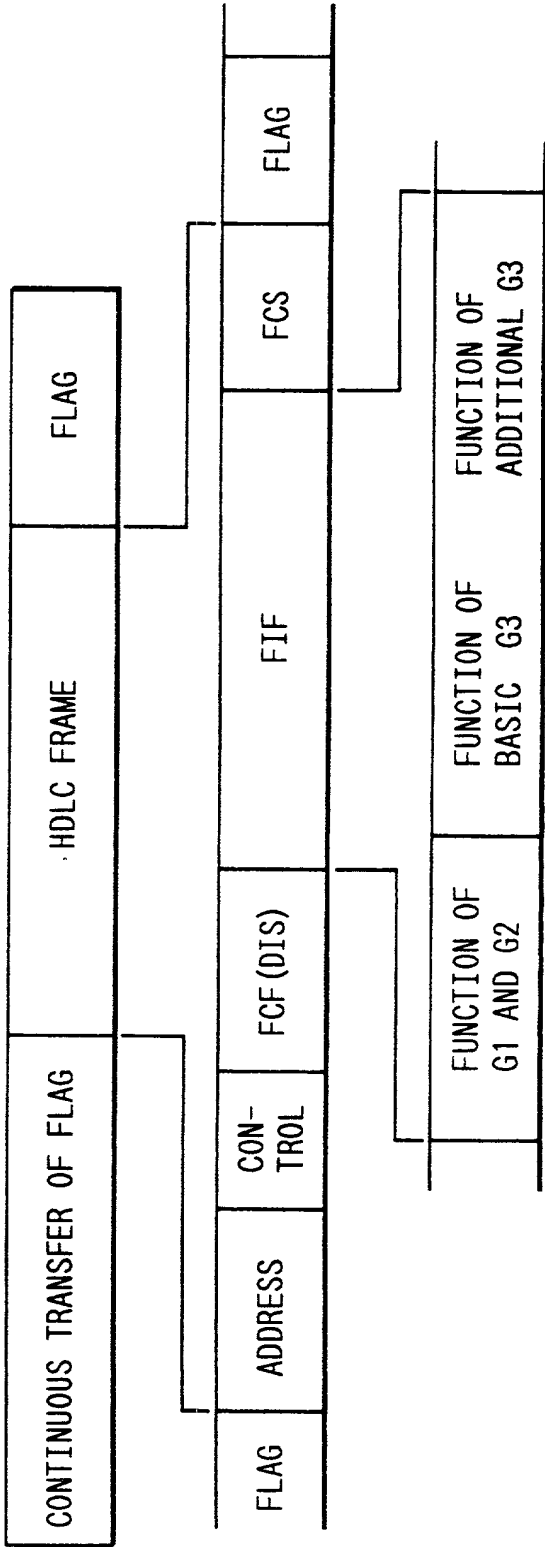


FIG. 69

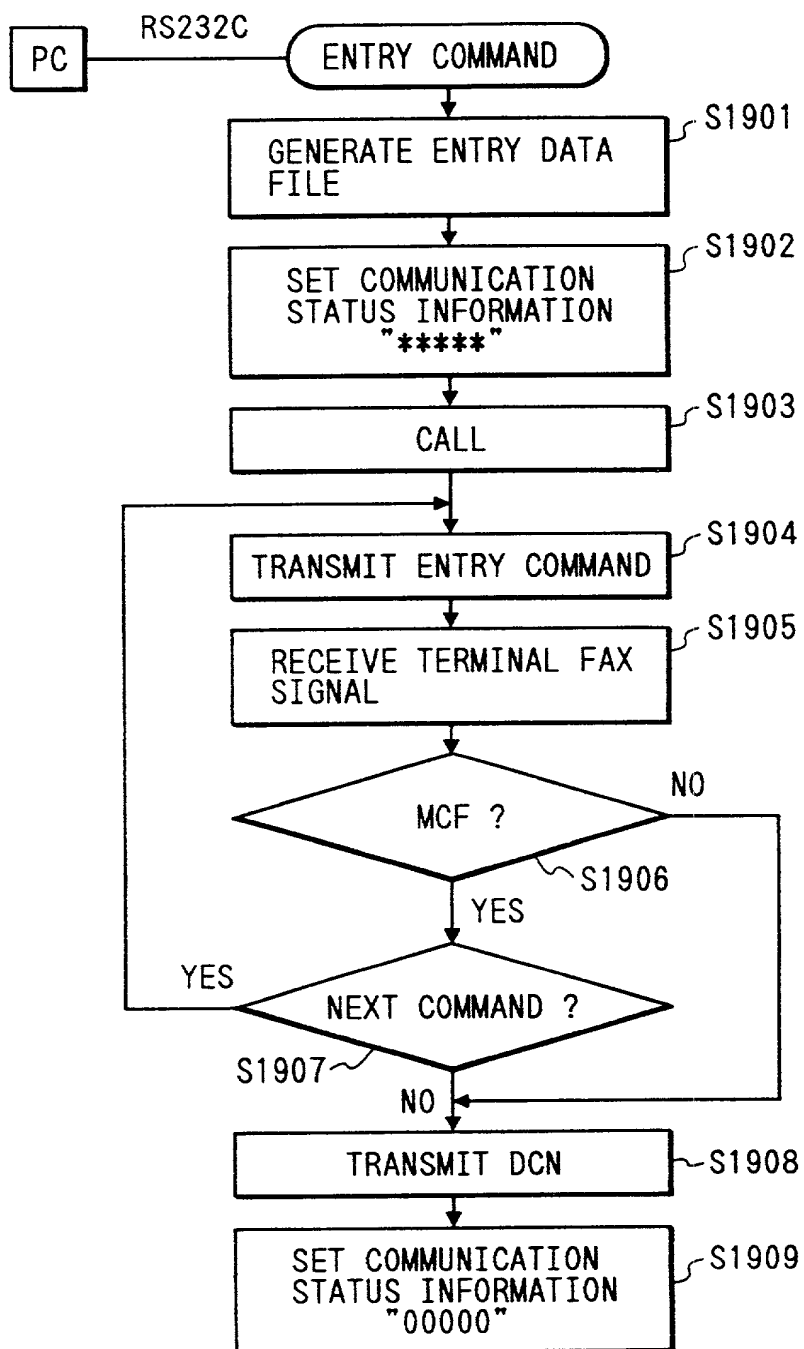


FIG. 70

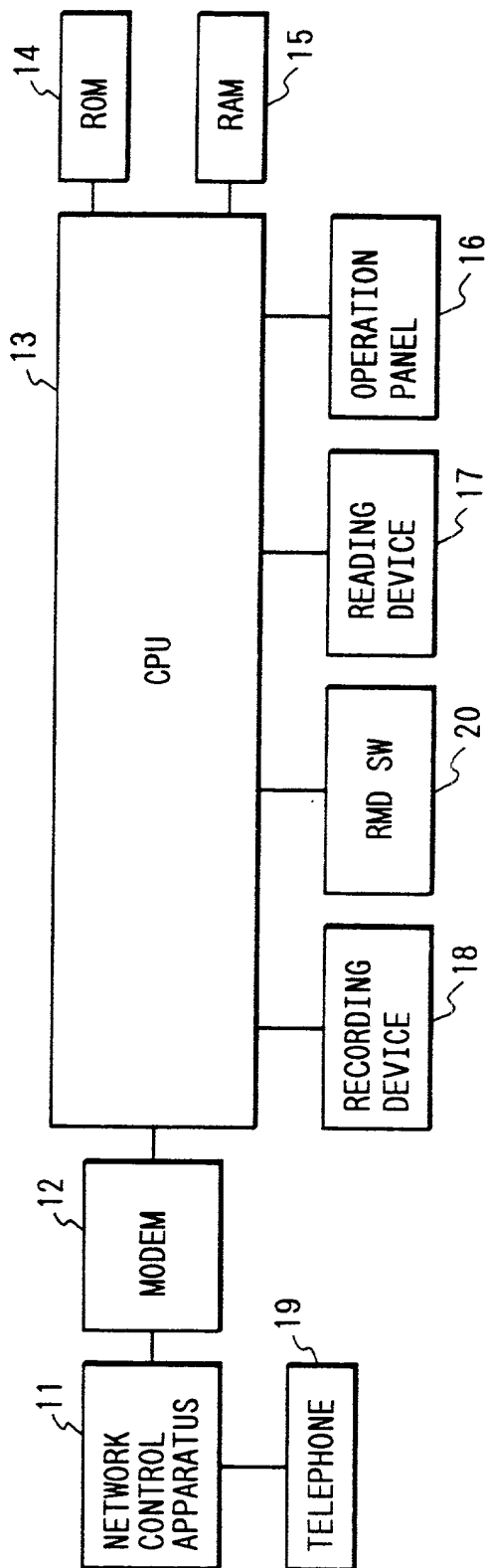


FIG. 71

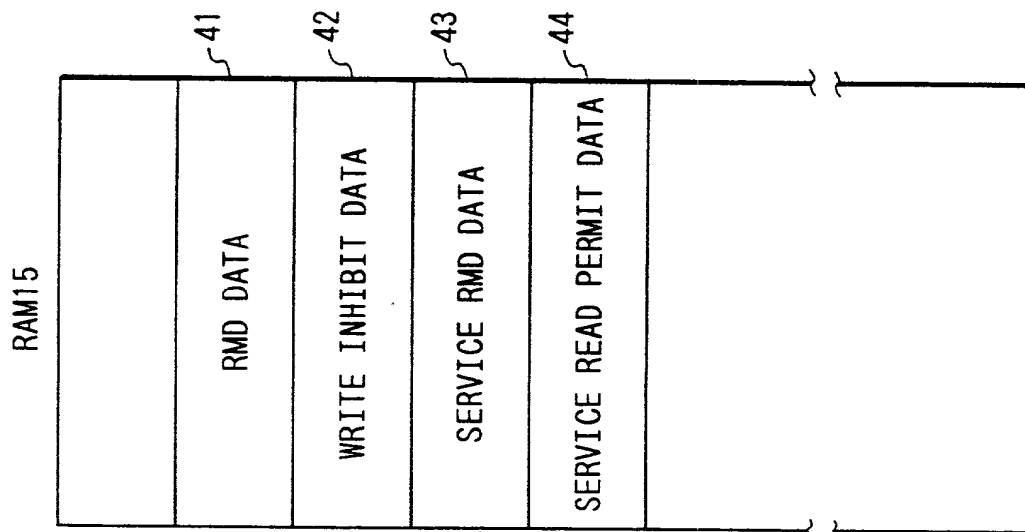


FIG. 72

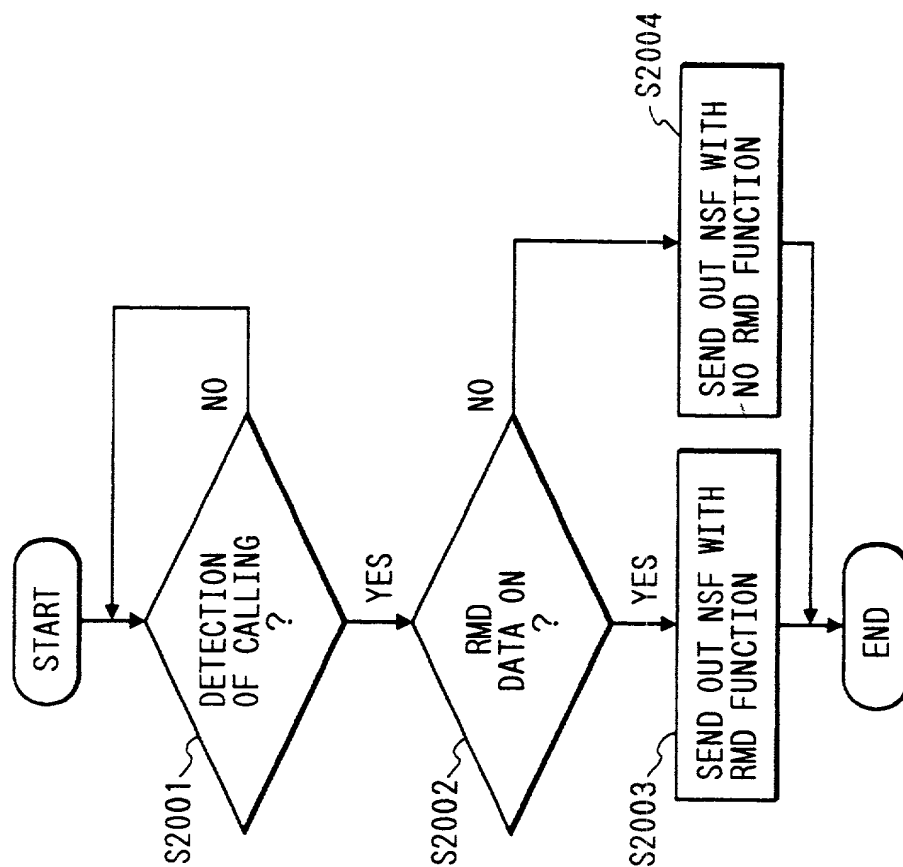


FIG. 73

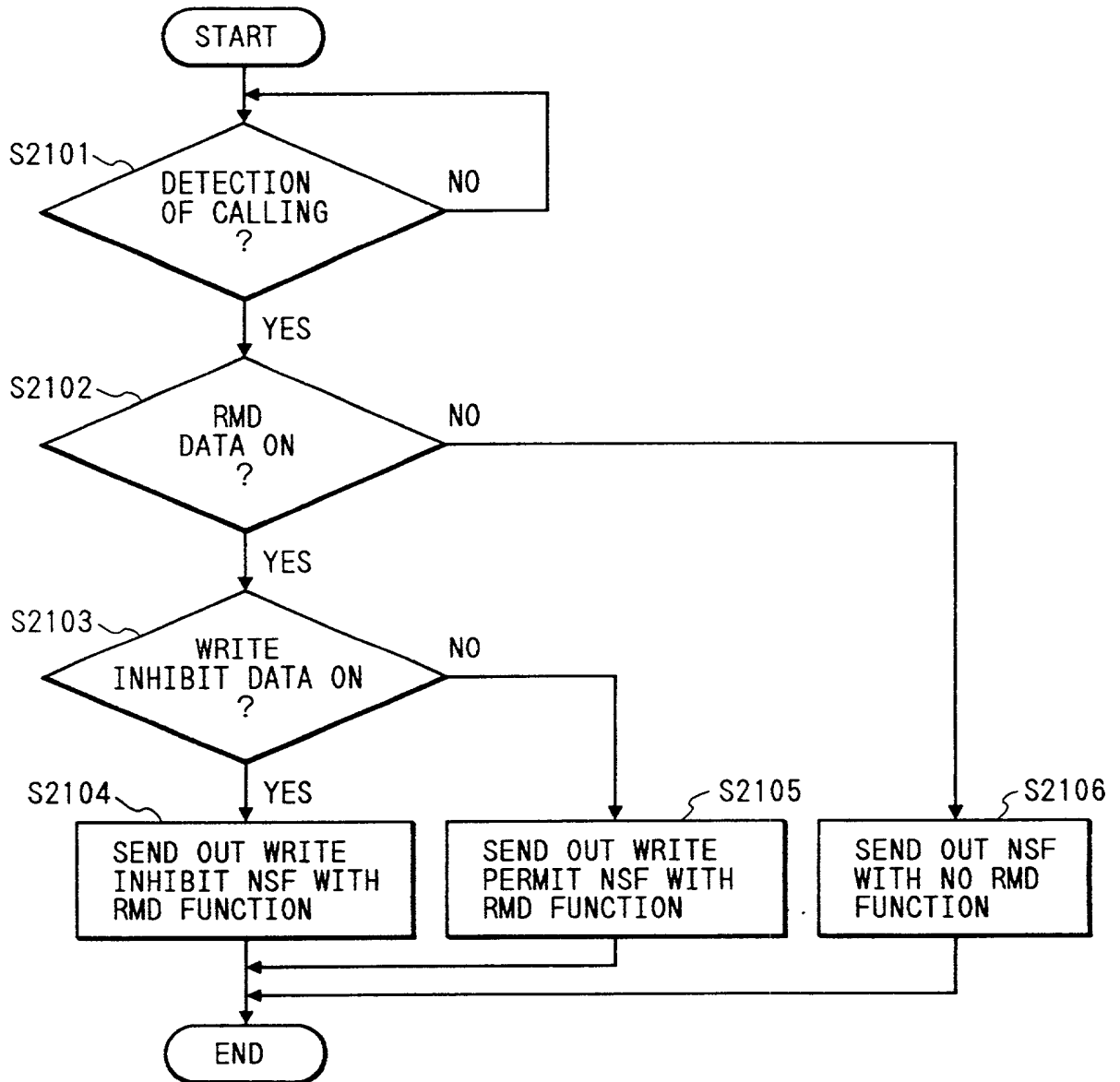


FIG. 74

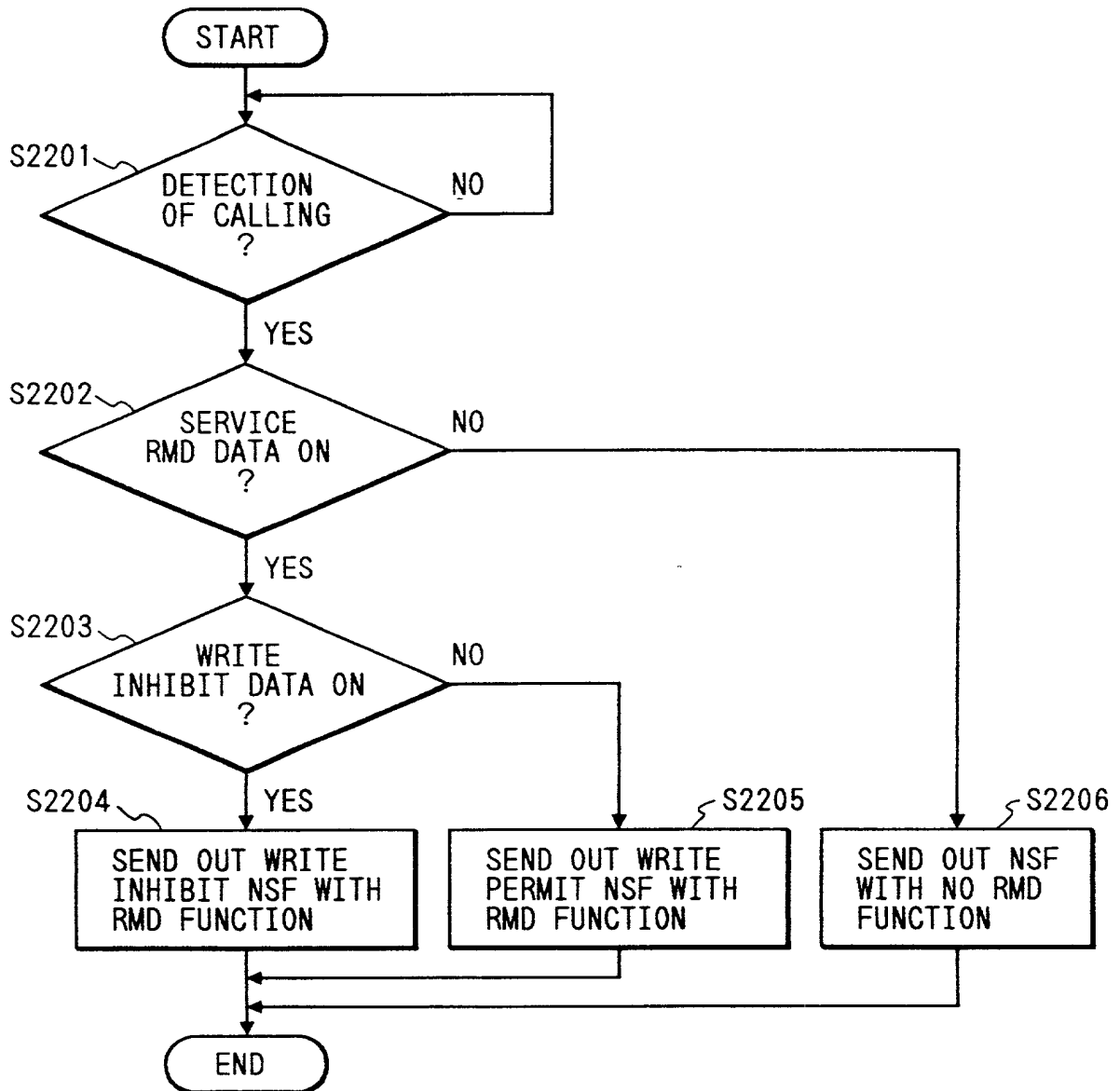


FIG. 75

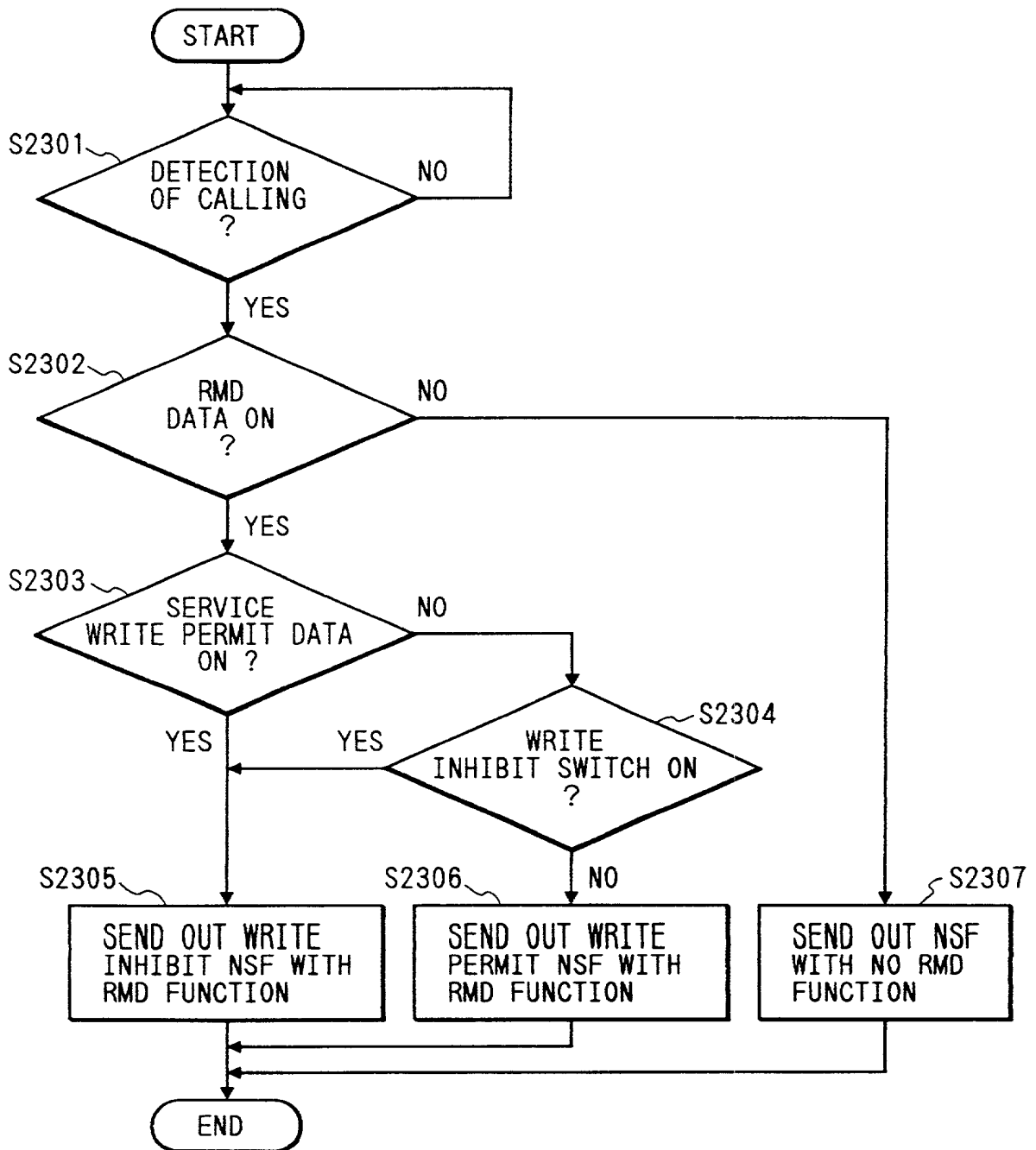


FIG. 76

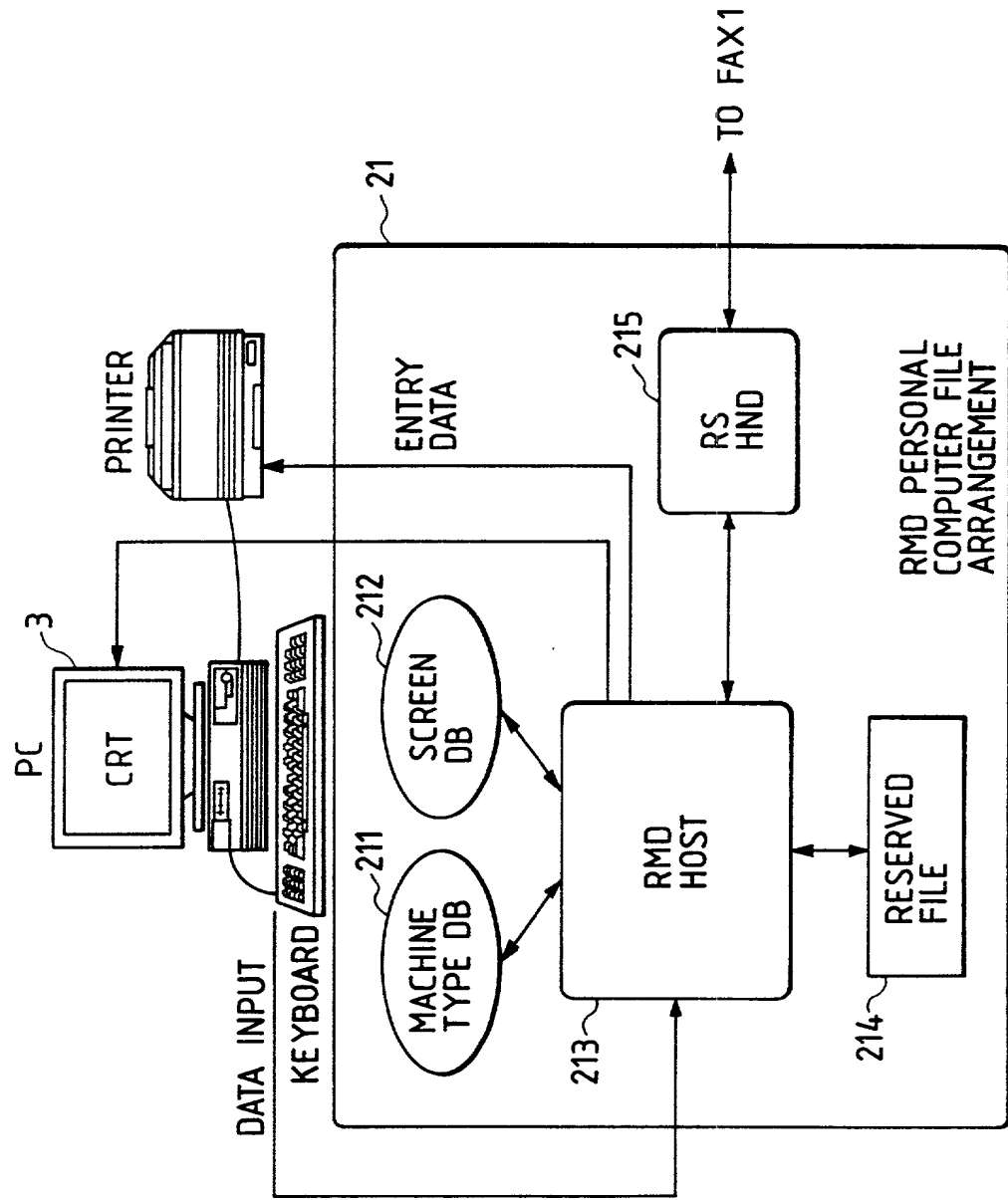


FIG. 77

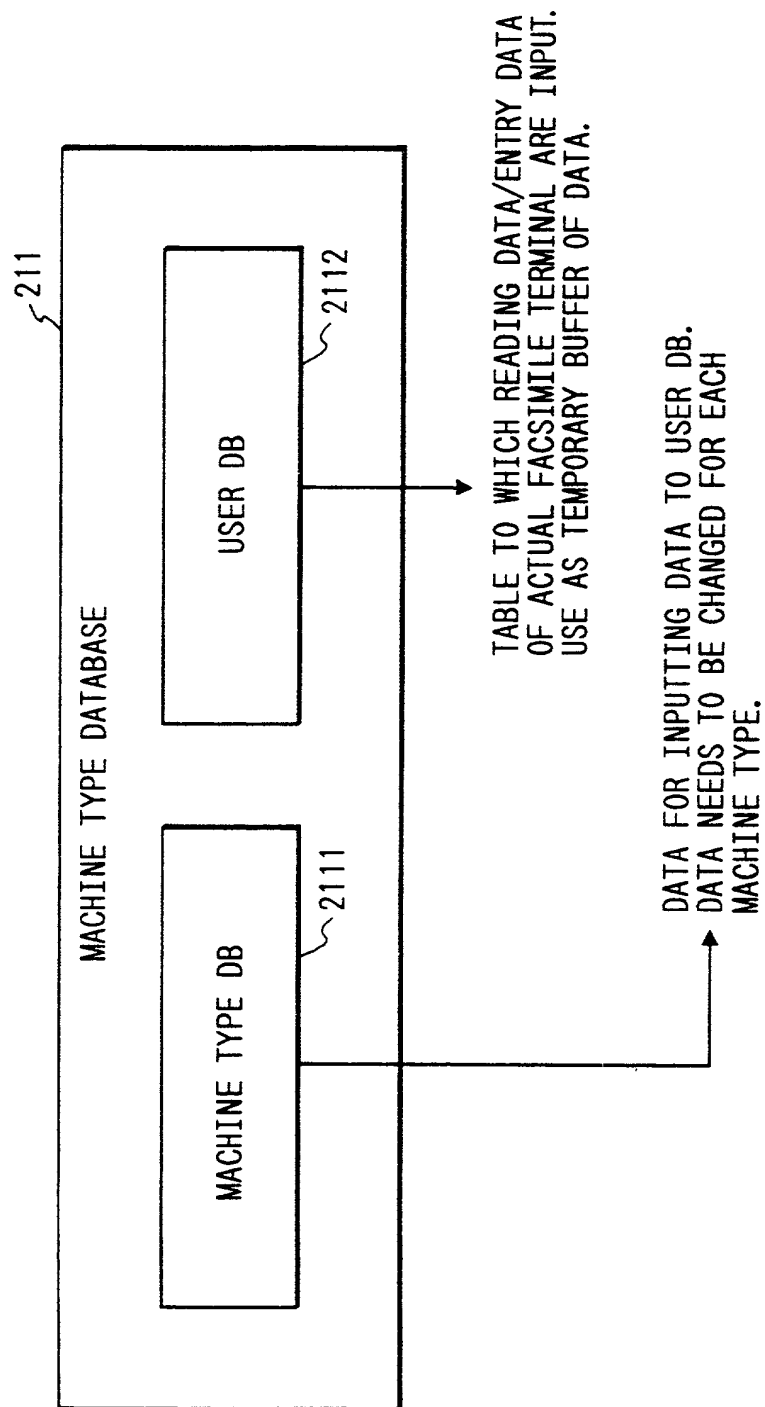


FIG. 78

(1) MACHINE TYPE DB

- MENU SCREEN GENERATION INFORMATION (menu_tbl)
 - DATA FOR GENERATING ENTRY MENU SCREEN FOR EACH INPUT LEVEL
 - DATA ON SCREEN WHICH TRANSITS FROM ENTRY MENU SCREEN FOR EACH INPUT LEVEL
- ENTRY TABLE INFORMATION (tbl_dat)
 - TABLE DATA IN USER DB TO WHICH DATA IS INPUT
- ENTRY SCREEN GENERATION INFORMATION (reg_dat)
 - DATA FOR GENERATING DATA INPUT DISPLAY SCREEN FOR EACH INPUT LEVEL
 - DATA INDICATIVE OF DATA INPUT POSITION FOR EACH INPUT LEVEL
 - COLUMN NAME OF USER DB, INPUT FOR EACH INPUT LEVEL
- DATA INPUT METHOD (clm_dat)
 - DATA INPUT METHOD TO EACH COLUMN OF USER DB, AND INPUT DATA SCOPE
- SELECTIVE DATA INFORMATION OF USER SOFT SW (ussw_dat)
 - DATA REFERRING TO sel_dat TABLE INDICATIVE OF OUTPUT MESSAGE FOR USER SOFT SW INPUT
- ACCESS INFORMATION OF USER SOFT SW • SERVICE SOFT SW (sw_dat)
 - DATA CORRESPONDING TO DATA INPUT SCREEN OF USER SOFT SW, SERVICE SOFT SW
- SELECTIVE MESSAGE AND DEFAULT MESSAGE INFORMATION UPON SELECTIVE INPUT (sel_dat)
 - DATA FOR INPUTTING DATA REPRESENTING OUTPUT MESSAGE AND COLUMN WHEN INPUTTING DATA BY SELECTING MESSAGE
- FUNCTION KEY INFORMATION (fno_dat)
 - DATA REPRESENTING MESSAGE OF FUNCTION KEY, DISPLAYED ON DATA INPUT SCREEN
- MESSAGE INFORMATION (msg)
 - TABLE TO WHICH ACTUAL CONDITION OF MESSAGE IS STORED (ENTRY IN THREE TYPES OF JAPANESE, ENGLISH AND USER CAN BE READY.)
- READING INFORMATION
 - DATA TABLE FOR DATA-PROCESSING TO USER DB TABLE WITH REFERENCE TO TABLE DATA UPON DATA RECEPTION, DATA TRANSMISSION, FILE DATA READING, FILE DATA RESERVATION, USER DB TABLE INITIALIZATION IN PC (DATA DELETION, 0 CLEAR)
- USER TERMINAL DATA READING COMMAND TABLE
 - TABLE FOR STORING DATA FOR READING USER DB DATA OF USER TERMINAL
- INVERTED MESSAGE REPRESENTATION TABLE
 - DATA REPRESENTING MESSAGE INVERTED

FIG. 79

2112

| | |
|-------------|--|
| (2) USER DB | |
| TABLE 1 | DATA OF USER TEL No./ABBREVIATION AND POLING ID ARE HANDLED. |
| TABLE 2 | DATA OF CALLING PERSON NAME IS HANDLED. |
| TABLE 3 | ONE-TOUCH/SHORTENED DIAL DATA IS HANDLED. |
| TABLE 4 | GROUP DIAL DATA IS HANDLED. |
| TABLE 5 | F NETWORK DIAL DATA IS HANDLED. |
| TABLE 6 | MAIL POST DATA IS HANDLED. |
| TABLE 7 | RELAY GROUP DATA IS HANDLED. |
| TABLE 8 | CONFIDENTIAL BOX DATA IS HANDLED. |
| TABLE 9 | USER SOFT SW DATA IS HANDLED. |
| TABLE 10 | SERVICE SOFT SW DATA IS HANDLED. |

FIG. 81

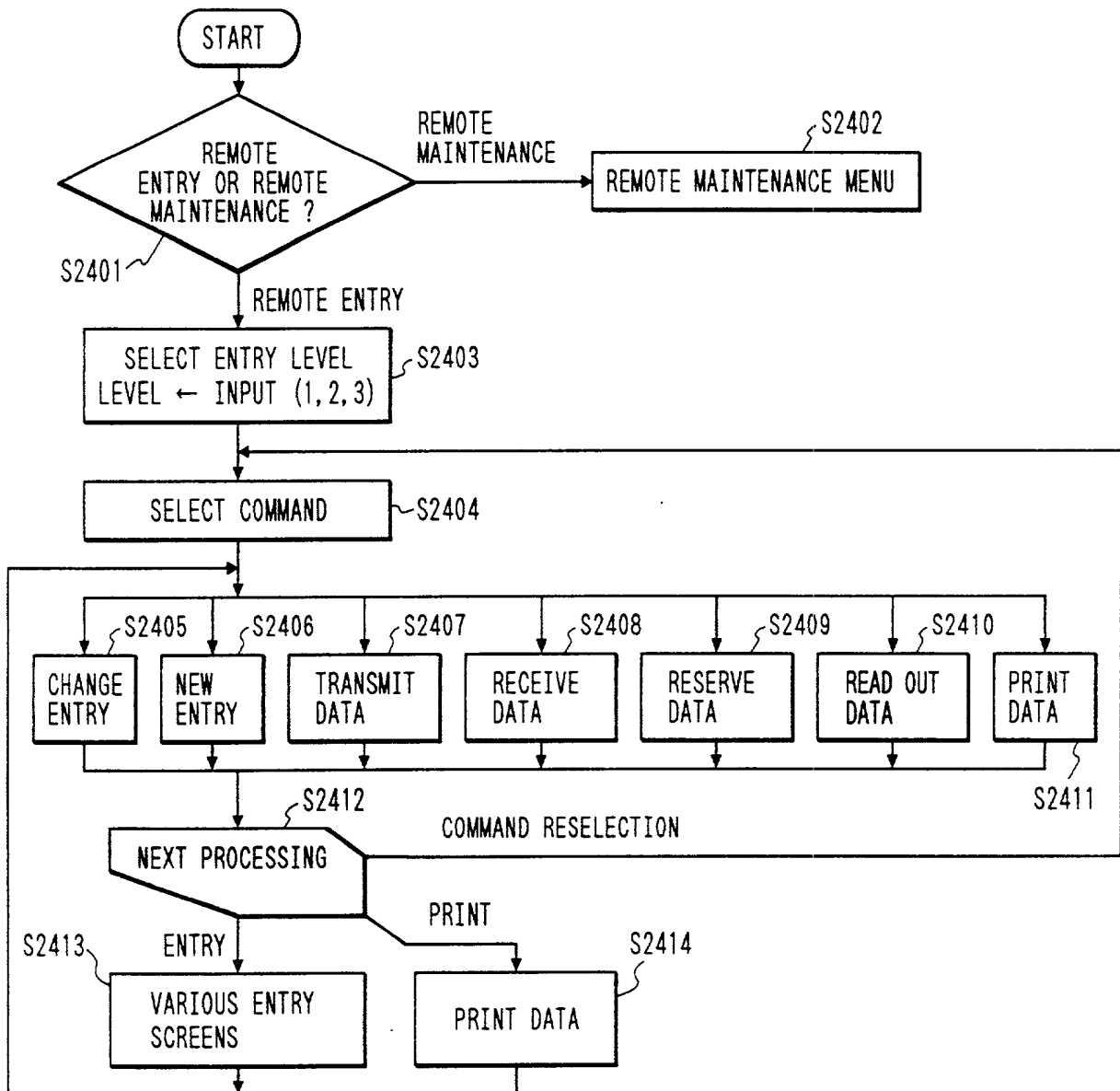


FIG. 82

| | |
|--------------------------------|-----|
| << REMOTE DIAGNOSTIC SYSTEM >> | |
| [MODE SELECTION] | 181 |
| PLEASE SELECT ITEM. | |
| 1. DATA ENTRY | |
| 2. REMOTE MAINTENANCE | |
| 3. END | |

INITIAL MENU SCREEN

FIG. 83

| | |
|---|--|
| << REMOTE DIAGNOSTIC SYSTEM >> | |
| [LEVEL SELECTION] | |
| PLEASE SELECT ITEM. | |
| 1. LEVEL 1 (GENERAL ENTRY) | |
| 2. LEVEL 2 (GENERAL ENTRY + ADDITIONAL ENTRY) | |
| 3. LEVEL 3 (GENERAL ENTRY + ADDITIONAL ENTRY + SERVICE DATA ENTRY) | |

ENTRY LEVEL SELECTIVE MENU SCREEN

FIG. 84

<< REMOTE DIAGNOSTIC SYSTEM >>

[COMMAND SELECTION]

PLEASE SELECT ITEM.

1. NEW ENTRY
2. DATA RECEPTION
3. DATA READING

COMMAND SELECTIVE SCREEN
(WHEN NOT SELECTING MACHINE TYPE NAME OF
FACSIMILE TERMINAL)

FIG. 85

<< REMOTE DIAGNOSTIC SYSTEM >>

[COMMAND SELECTION]

PLEASE SELECT ITEM.

1. NEW ENTRY
2. DATA RECEPTION
3. DATA READING
4. CHANGE ENTRY
5. DATA TRANSMISSION
6. DATA RESERVATION
7. DATA LIST OUTPUT
8. TIME SET

COMMAND SELECTIVE SCREEN
(WHEN SELECTING MACHINE TYPE OF
FACSIMILE TERMINAL)

FIG. 86

<< REMOTE DIAGNOSTIC SYSTEM >>

[ENTRY MENU] [LEVEL 1]

PLEASE SELECT ITEM.

1. USER TEL No./ABBREVIATION ENTRY
2. CALLING PERSON NAME ENTRY
3. ONE-TOUCH/SHORTENED DIAL ENTRY

ENTRY MENU SCREEN (ENTRY LEVEL 1)

FIG. 87

<< REMOTE DIAGNOSTIC SYSTEM >>

[ENTRY MENU] [LEVEL 2]

PLEASE SELECT ITEM.

1. USER TEL NO./ABBREVIATION ENTRY
2. CALLING PERSON NAME ENTRY
3. ONE-TOUCH/SHORTENED DIAL ENTRY
4. GROUP DIAL ENTRY
5. F NETWORK DIAL ENTRY
6. MAIL POST ENTRY
7. RELAY GROUP ENTRY
8. CONFIDENTIAL BOX ENTRY
9. USER SOFT SW ENTRY
- A. DATA LIST OUTPUT

ENTRY MENU SCREEN (ENTRY LEVEL 2)

FIG. 88

<< REMOTE DIAGNOSTIC SYSTEM >>

[ENTRY MENU]

[LEVEL 3]

PLEASE SELECT ITEM.

1. USER TEL No./ABBREVIATION ENTRY
2. CALLING PERSON NAME ENTRY
3. ONE-TOUCH/SHORTENED DIAL ENTRY
4. GROUP DIAL ENTRY
5. F NETWORK DIAL ENTRY
6. MAIL POST ENTRY
7. RELAY GROUP ENTRY
8. CONFIDENTIAL BOX ENTRY
9. USER SOFT SW ENTRY
- A. SERVICE SOFT SW ENTRY
- B. DATA LIST OUTPUT

ENTRY MENU SCREEN (ENTRY LEVEL 3)

[illegible]

ONE-TOUCH/SHORTENED ENTRY SCREEN (ENTRY LEVEL 1)

[illegible]

ONE-TOUCH/SHORTENED ENTRY SCREEN (ENTRY LEVELS 2,3)

FIG. 93

| | LEVEL | REMOTE COMMAND | READING DATA | EXAMPLE OF COMMAND |
|-------------------|-------|-------------------|--------------------------|-----------------------|
| REMOTE READING | 2 | CD | CONFIDENTIAL BOX | CD |
| | 1 | DD | ONE-TOUCH/SHORTENED DIAL | DD |
| | 2 | FD | F NETWORK DIAL | FD |
| | 2 | GD | GROUP DIAL | GD |
| | 1 | KD | CIRCUIT DATA | KD |
| | 3 | SD | SERVICE SOFT SW DATA | SD |
| | 1 | TD | CALLING PERSON NAME | TD |
| | 2 | UD | USER SOFT SW DATA | UD |

FIG. 95

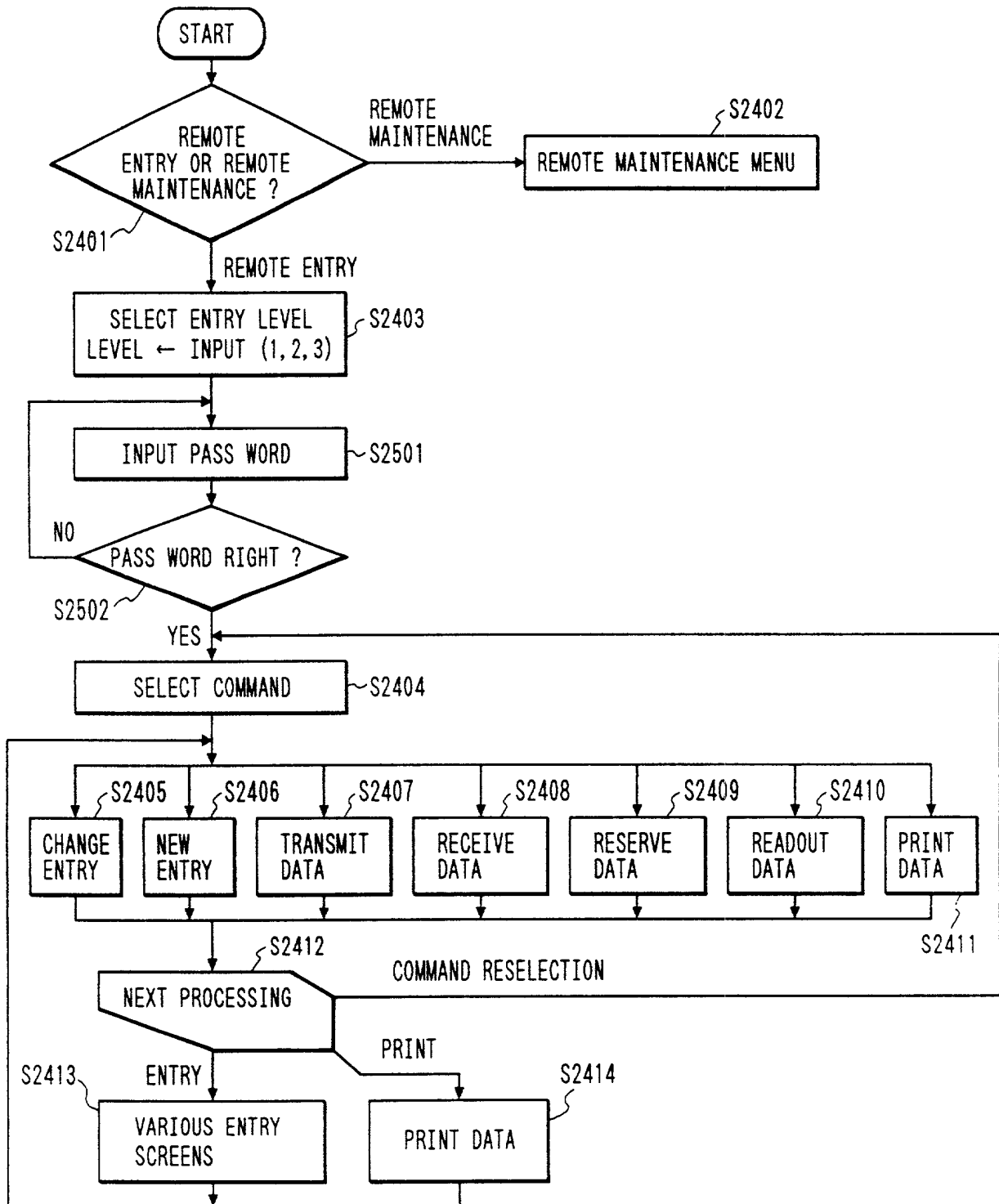


FIG. 96

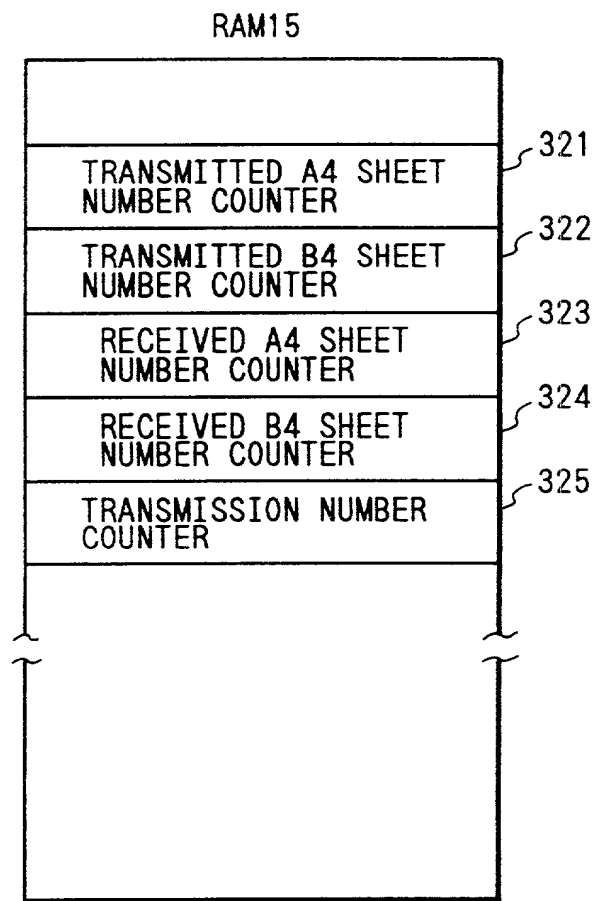


FIG. 97

```

<< REMOTE DIAGNOSTIC SYSTEM >>
[ P.G.P. ]

>>CONNECTION NUMBER INPUT (20 FIGURES)
-----
>>EXECUTION OF P.G.P. DATA READING

>>EXECUTION OF P.G.P. DATA INITIALIZATION

[ P.G.P. DATA DISPLAY ]
ALL COMMUNICATION NUMBER      _
ALL ERROR NUMBER              _
TRANSMITTED SHEET SIZE        A4_  B4_
RECEIVED SHEET SIZE           A4_  B4_

OPERATION CONTENTS : DIALING

F1: BREAK  F8: PRINT
    
```

FIG. 98

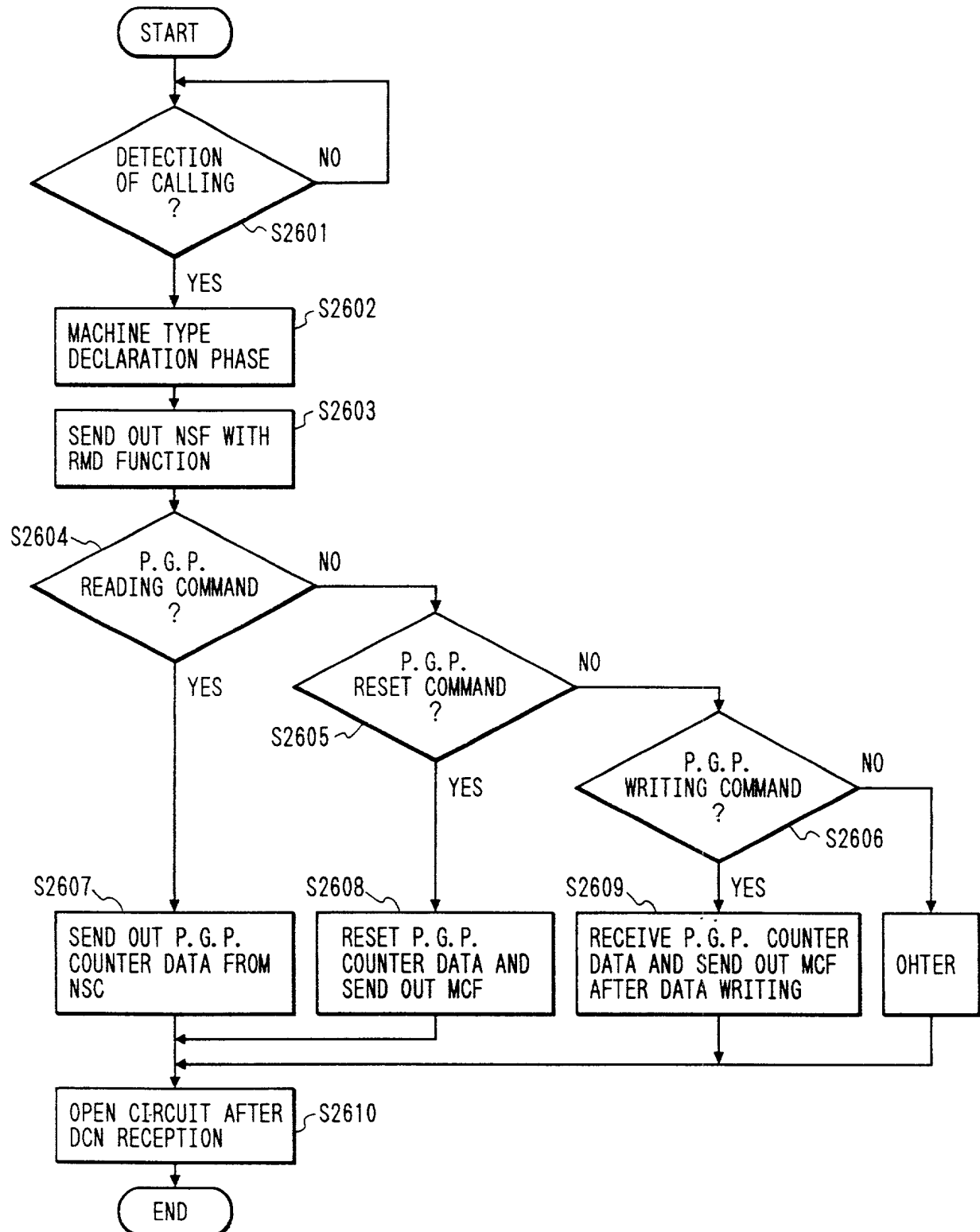


FIG. 99

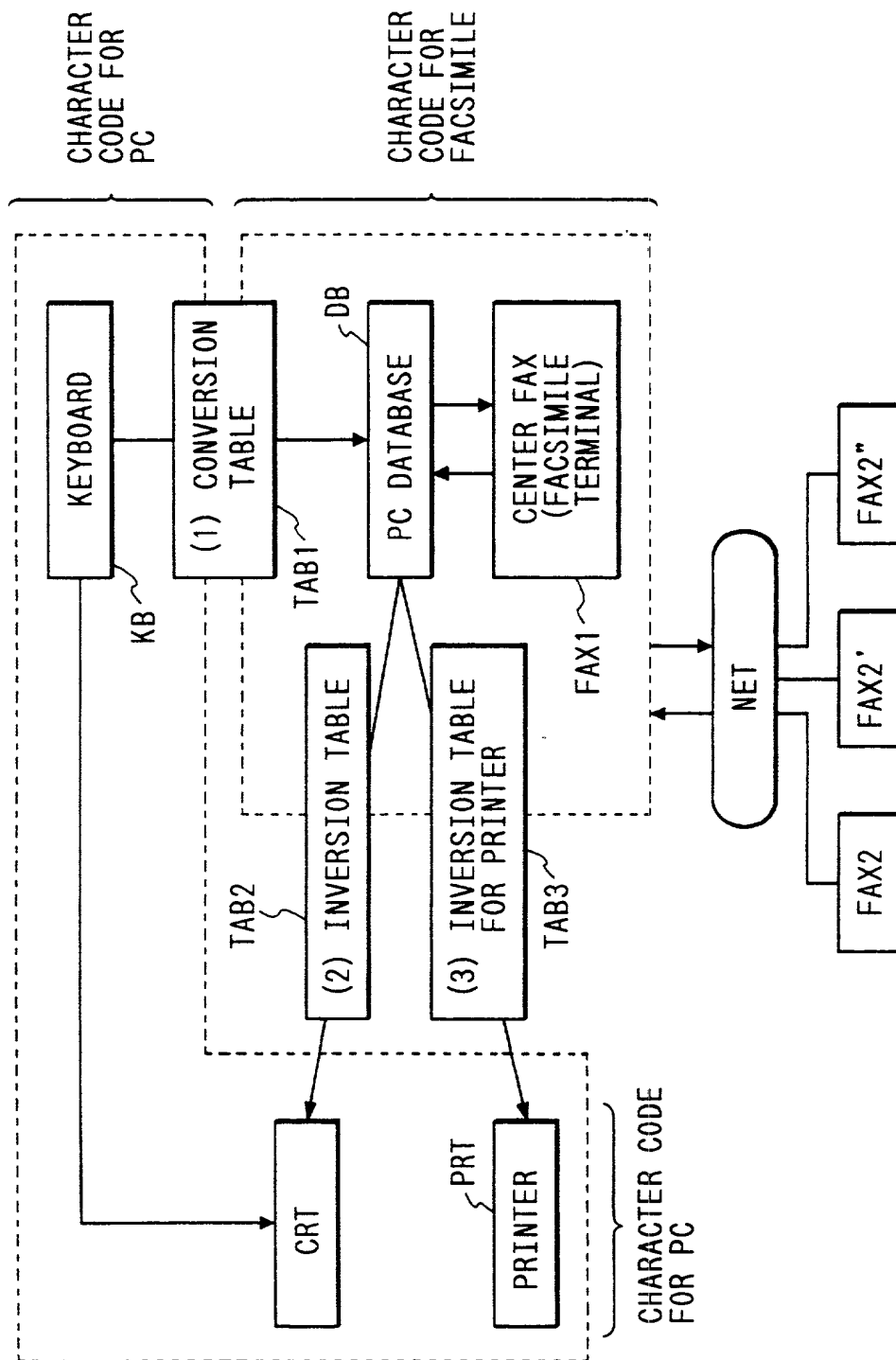


FIG. 100

| DATA NUMBER: | CHARACTER CODE DATA | | | | | | | | | | | | | | | |
|------------------------|---------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| (HEXADECIMAL NOTATION) | DATA AFTER CONVERSION OF 05H | | | | | | | | | | | | | | | |
| 0000:00 | 01 | 02 | 03 | 04 | 08 | 06 | 05 | - | 07 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
| 0010:30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | - | 38 | 39 | 3A | 3B | 3C | 3D | 3E | 3F |
| 0020:40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | - | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F |
| | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 0100:00 | 01 | 02 | 03 | 04 | 07 | 06 | 08 | - | 05 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
| | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 0110:.. | .. | .. | .. | .. | .. | .. | .. | - | .. | .. | .. | .. | .. | .. | .. | .. |
| 0120:.. | .. | .. | .. | .. | .. | .. | .. | - | .. | .. | .. | .. | .. | .. | .. | .. |
| 0130:10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | - | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| | .. | .. | .. | .. | .. | .. | .. | - | .. | .. | .. | .. | .. | .. | .. | .. |
| 0200:00 | 01 | 02 | 03 | 04 | 07 | 06 | 08 | - | 05 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
| 0210:.. | .. | .. | .. | .. | .. | .. | .. | - | .. | .. | .. | .. | .. | .. | .. | .. |
| 0220:.. | .. | .. | .. | .. | .. | .. | .. | - | .. | .. | .. | .. | .. | .. | .. | .. |
| 0230:10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | - | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| | .. | .. | .. | .. | .. | .. | .. | - | .. | .. | .. | .. | .. | .. | .. | .. |

CHARACTER CODE CONVERSION TABLE
TAB1

CHARACTER CODE INVERSION TABLE
TAB2

CHARACTER CODE INVERSION TABLE
FOR PRINTER TAB3

FIG. 101

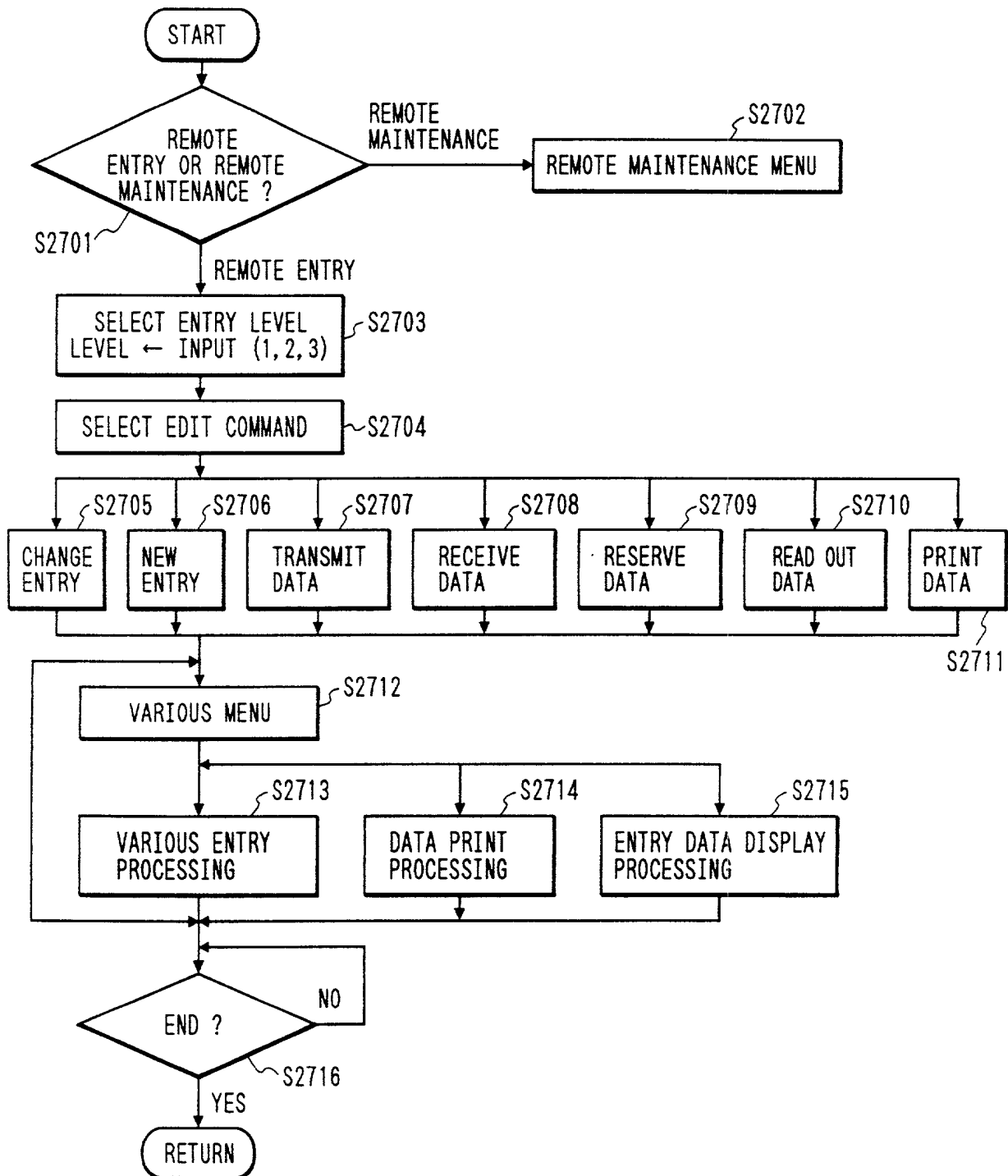


FIG. 102

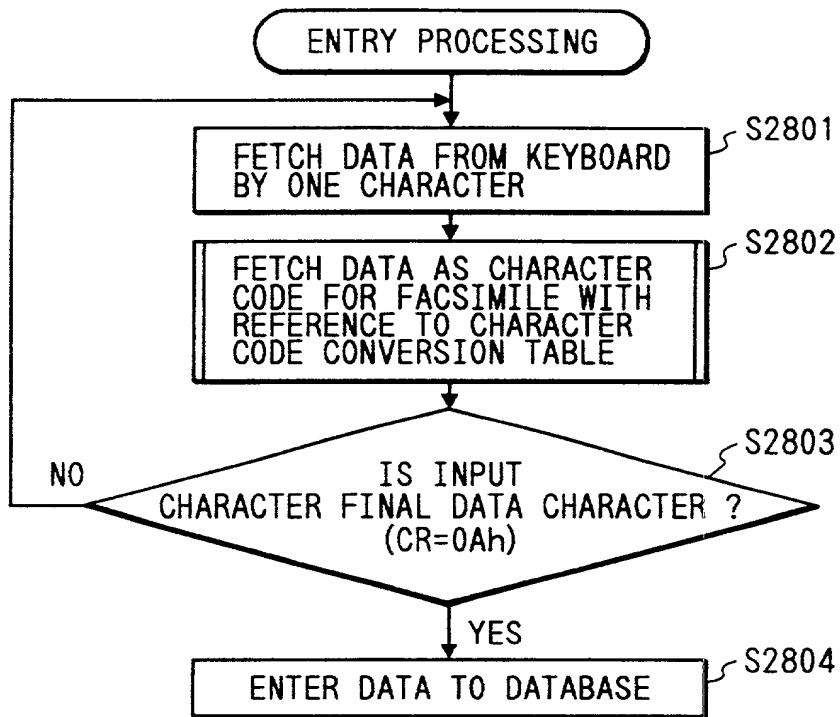


FIG. 103

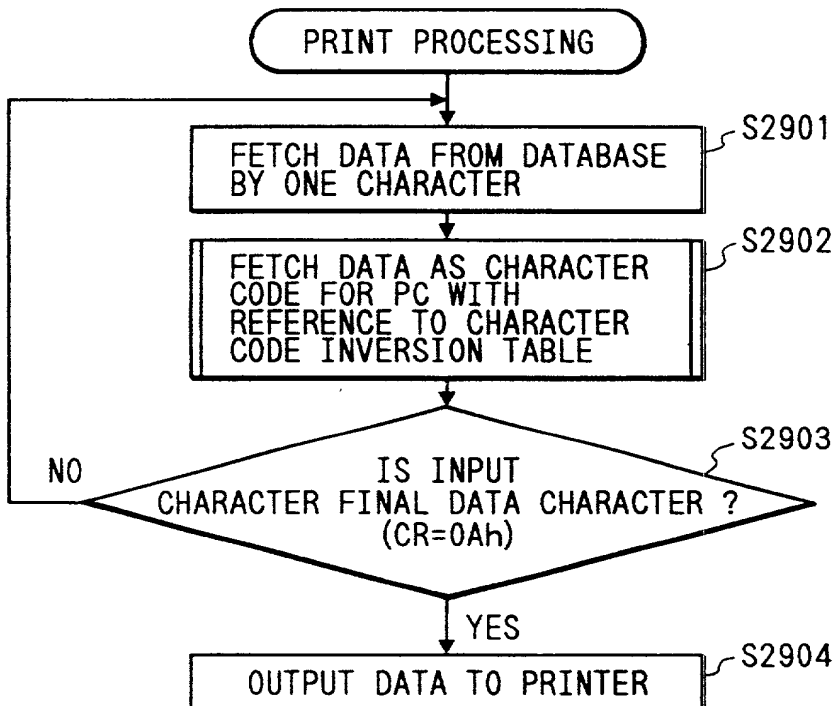


FIG. 104

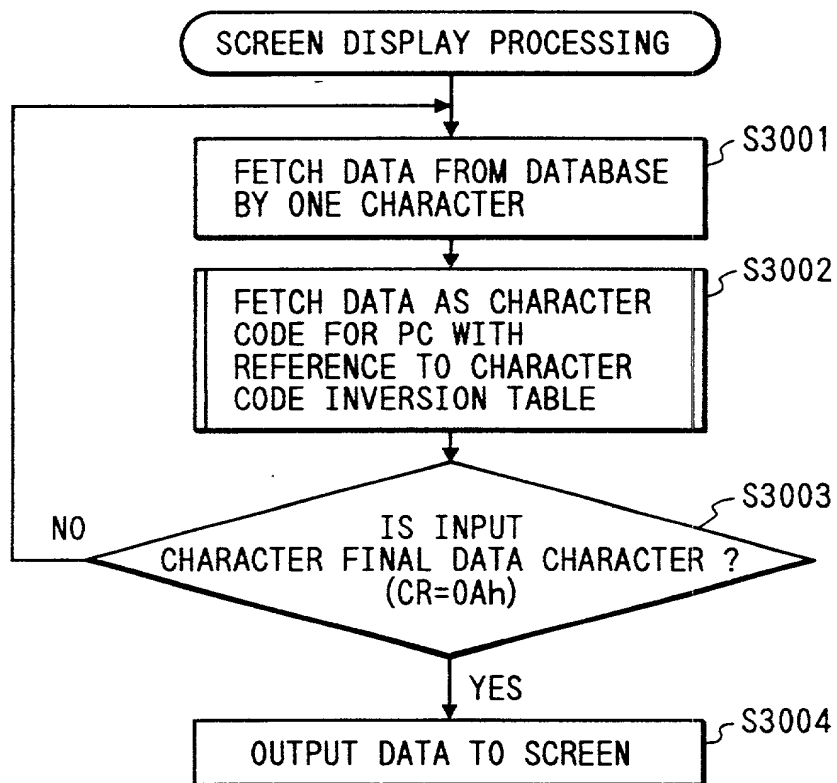


FIG. 105

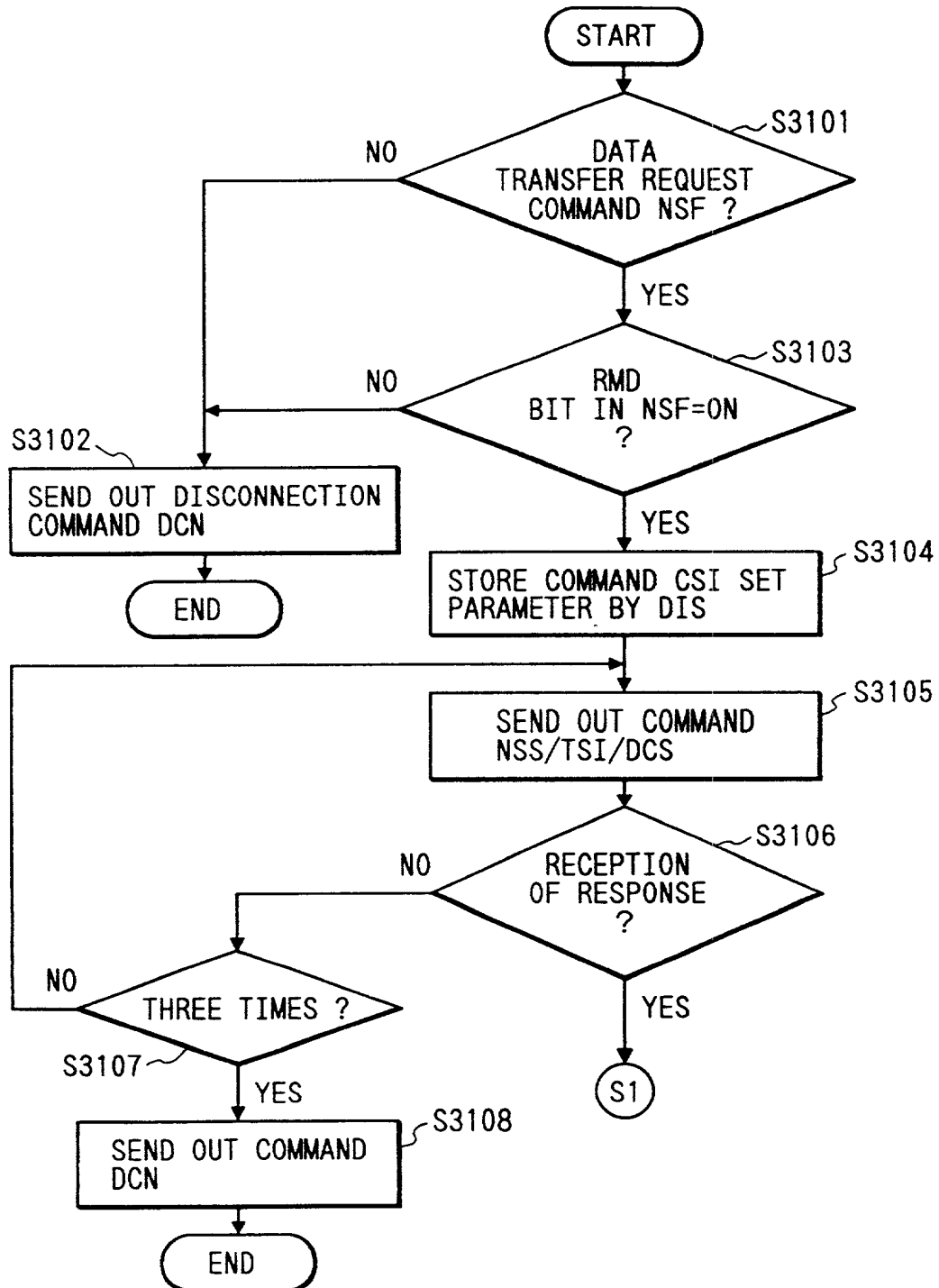


FIG. 107

| |
|-----------|
| FIG. 107A |
| FIG. 107B |

FIG. 107A

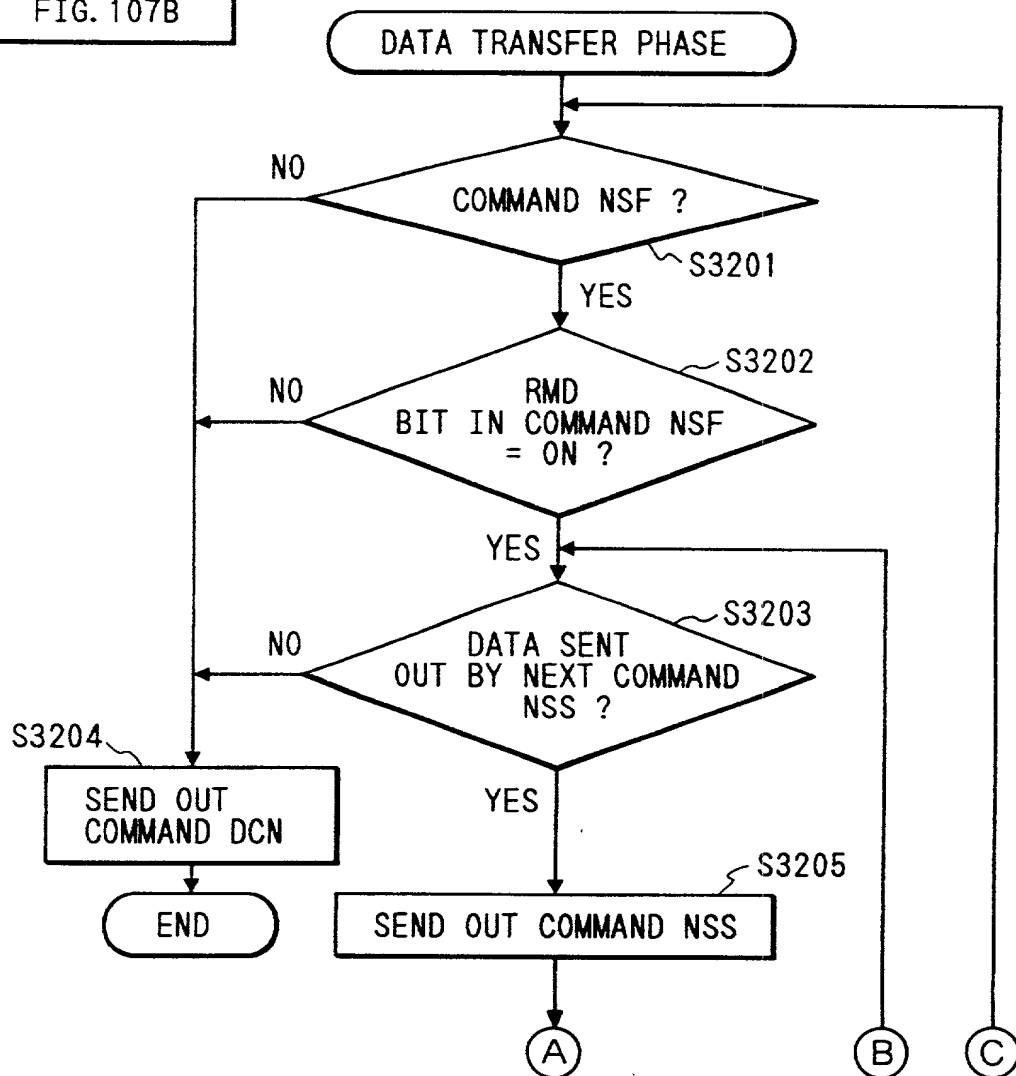
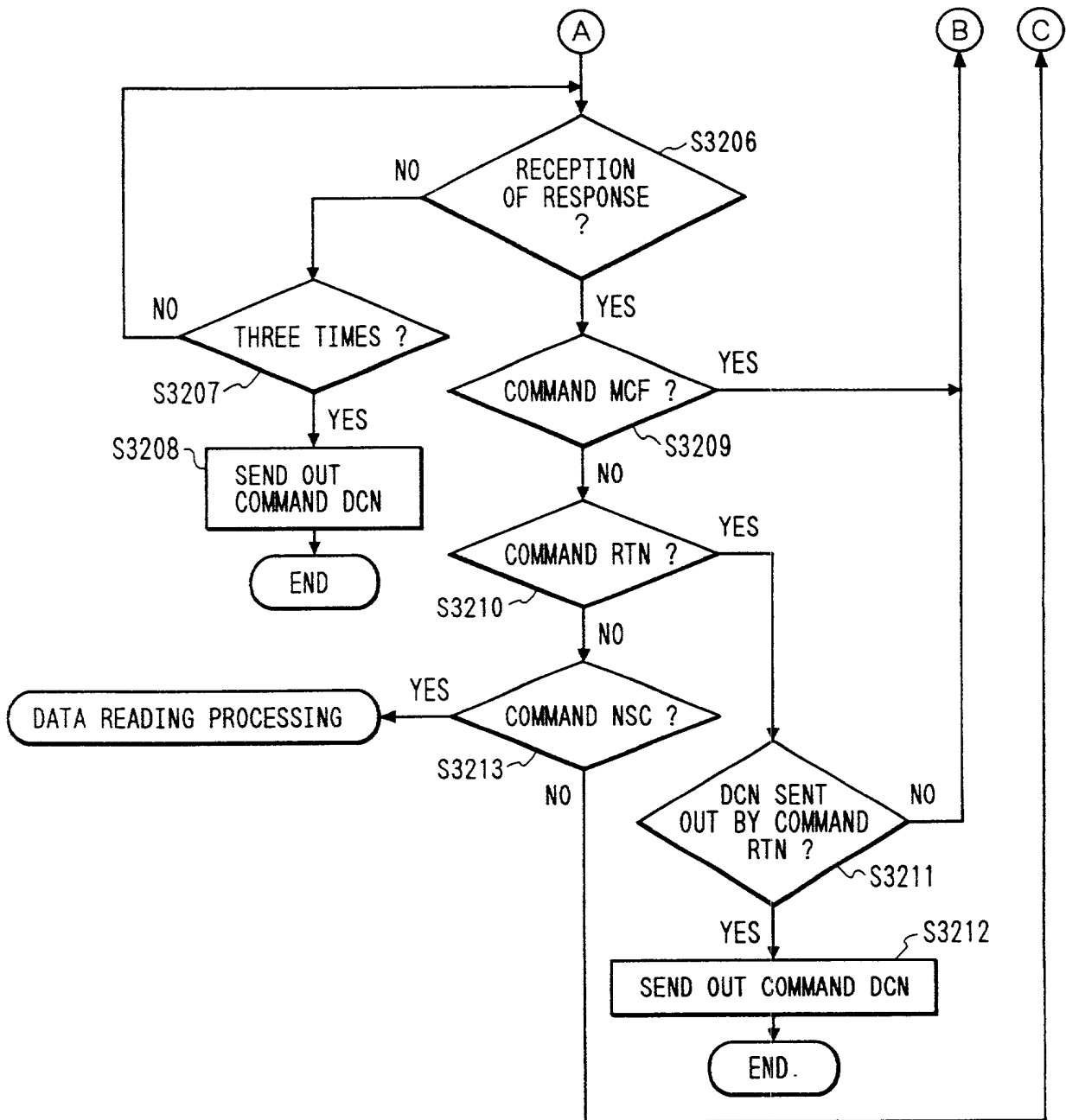
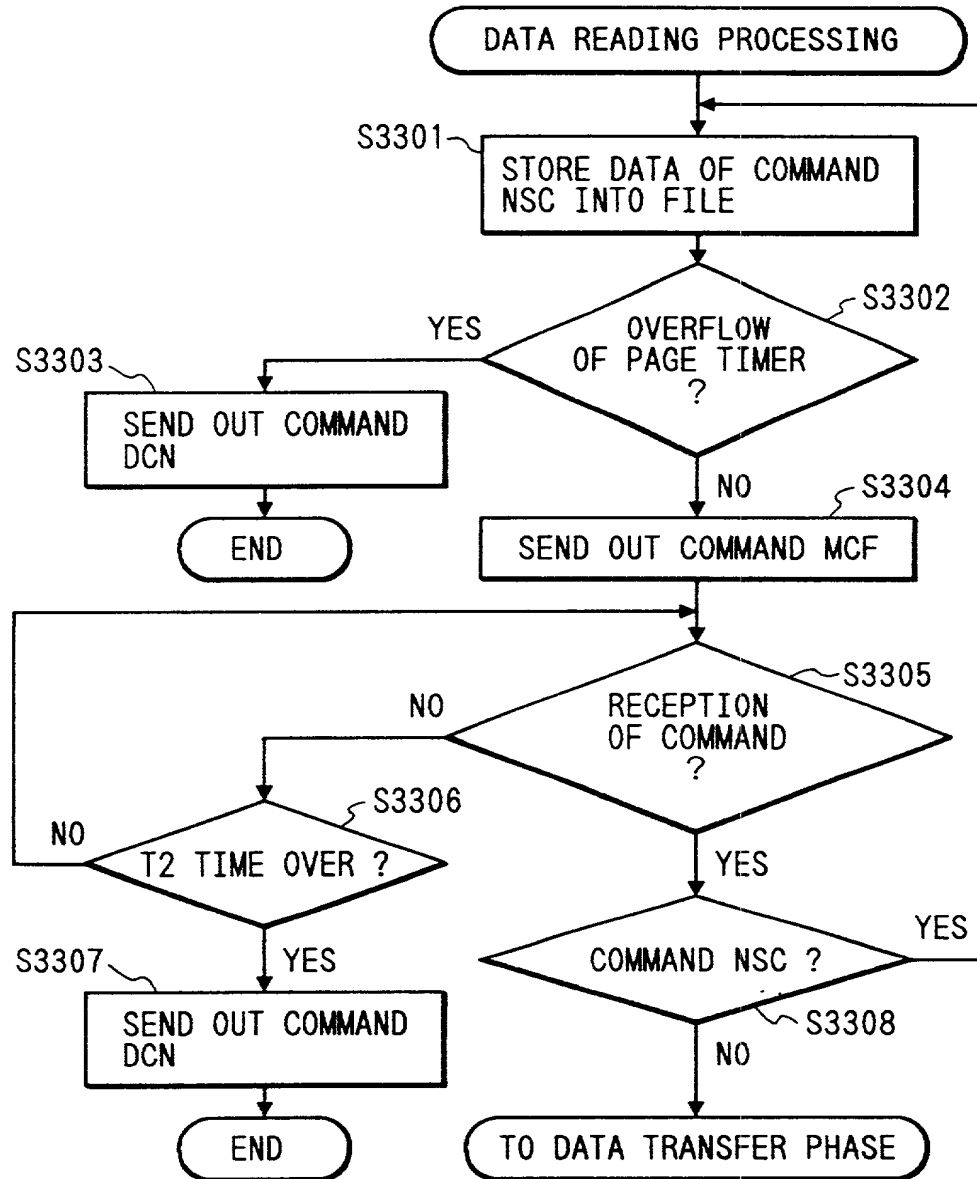


FIG. 107B



660600-8084960

FIG. 108



660600 8084960

My residence, post office address and citizenship are as stated below next to my name;

COMPUTER AND FACSIMILE MACHINE, the specification of which

and was amended _____ (if applicable).

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

| Country | Application No. | Filed (Day/Mo./Yr.) | Priority Claimed (Yes/No) |
|---------|-----------------|---------------------|---------------------------|
| JAPAN | 4-315883 | 30 October 1992 | Yes |
| JAPAN | 4-331958 | 11 December 1992 | Yes |
| JAPAN | 4-331959 | 11 December 1992 | Yes |
| JAPAN | 4-331960 | 11 December 1992 | Yes |

I hereby appoint Joseph M. Fitzpatrick (Registration No. 17,398), Lawrence F. Scinto (Registration No. 18,973), William J. Brunet (Registration No. 20,452), Robert L. Baechold (Registration No. 20,860), John A. O'Brien (Registration No. 24,367), Nels T. Lippert (Registration No. 25,888), John A. Krause (Registration No. 24,613), Henry J. Renk (Registration No. 25,499), Peter Saxon (Registration No. 24,947), Anthony M. Zupcic (Registration No. 27,276), Charles P. Baker (Registration No. 26,702), Stevan J. Bosses (Registration No. 22,291), Edward E. Vassallo (Registration No. 29,117), Ronald A. Clayton (Registration No. 26,718), Lawrence A. Stahl (Registration No. 30,110), Laura A. Bauer (Registration No. 29,767), Leonard P. Dians (Registration No. 29,296), David M. Quinlan (Registration No. 26,641), Nicholas N. Kallas (Registration No. 31,530), William M. Wannisky (Registration No. 28,373), Lawrence Alaburda (Registration No. 31,583), Lawrence S. Perry (Registration No. 31,865), Robert H. Fischer (Registration No. 30,051), Christopher Philip Wrist (Registration No. 32,078), Gary M. Jacobs (Registration No. 28,861), Michael K. O'Neill (Registration No. 32,622), Bruce C. Haas (Registration No. 32,734), Scott K. Reed (Registration No. 32,433), Scott D. Malpede (Registration No. 32,533), John A. Mitchell (Registration No. 19,032), Fredrick M. Zullo (Registration No. 32,452), Richard P. Bauer (Registration No. 31,588), Eric B. Janofsky (Registration No. 30,759), Warren E. Olsen (Registration No. 27,290), Abigail F. Cousins (Registration No. 29,292), Alan W. Fiedler (Registration No. 33,690), Jennifer A. Tegfeldt (Registration No. 31,310), Steven E. Warner (Registration No. 33,326), Thomas J. O'Connell (Registration No. 33,202), Aaron C. Deditch (Registration No. 33,865), Penina Wollman (Registration No. 30,816), David L. Schaeffer (Registration No. 32,716), Jack S. Cubert (Registration No. 24,245), Mark A. Williamson (Registration No. 33,628), John T. Whelan (Registration No. 32,448), Patricia M. Drost (Registration No. 29,790), Jean K. Dudek (Registration No. 30,938), Raymond R. Mandra (Registration No. 34,382) and Dominick A. Conde (Registration No. 33,856), my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Address all correspondence to:

FITZPATRICK, CELLA, HARPER & SCINTO
277 Park Avenue
New York, N.Y. 10172
Telephone No. (212) 758-2400

**COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION**

(Page 2)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor KAZUHIRO SUGAWARA
Inventor's signature Kazuhiko Sugawara
Date December 8, 1993 Citizen/Subject of JAPAN
Residence Nerima-ku, Tokyo, Japan
Post Office Address c/o Canon Kabushiki Kaisha
30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Full Name of Second Joint Inventor, if any TORU MAEDA
Second Inventor's signature Toru Maeda
Date December 8, 1993 Citizen/Subject of JAPAN
Residence Mitaka-shi, Tokyo, Japan
Post Office Address c/o Canon Kabushiki Kaisha
30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Full Name of Third Joint Inventor, if any HITOSHI SAITO
Third Inventor's signature Hiroshi Saito
Date December 8, 1993 Citizen/Subject of JAPAN
Residence Yokohama-shi, Kanagawa-ken, Japan
Post Office Address c/o Canon Kabushiki Kaisha
30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Full Name of Fourth Joint Inventor, if any AKEMI SATO
Fourth Inventor's signature Akemi Sato
Date December 8, 1993 Citizen/Subject of JAPAN
Residence Kawasaki-shi, Kanagawa-ken, Japan
Post Office Address c/o Canon Kabushiki Kaisha
30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Full Name of Fifth Joint Inventor, if any AKIRA MATSUI
Fifth Inventor's signature Akira Matsui
Date December 8, 1993 Citizen/Subject of JAPAN
Residence Ohta-ku, Tokyo, Japan
Post Office Address c/o Canon Kabushiki Kaisha
30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Full Name of Sixth Joint Inventor, if any _____
Sixth Inventor's signature _____
Date _____ Citizen/Subject of _____
Residence _____
Post Office Address _____